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MARCH, 1961

Volume 67, Number 3

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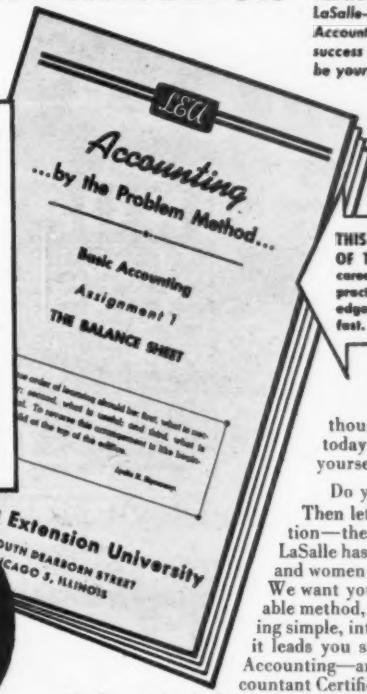

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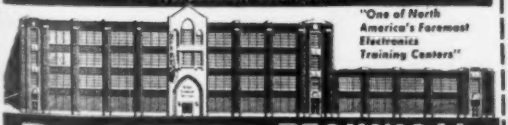

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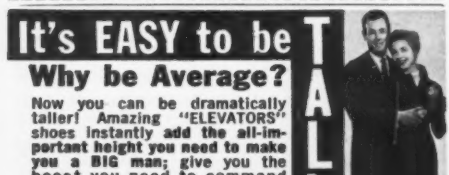

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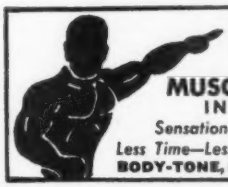

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Has shop in basement—gets "more and more work all along"

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—JOHN D. PETTIS,
172 N. Fulton, Bradley, Illinois

IF YOU'VE BEEN WANTING TO START "A LITTLE BUSINESS OF YOUR OWN" IN YOUR BASEMENT OR GARAGE

CHECK the advantages of NRI training in Servicing Electrical Appliances

- ☐ **STEADY DEMAND** for your services. Over 400 million appliances in U.S. — 6 million sold last year alone — mean shortage of trained appliance service men.
- ☐ **NO ELABORATE EQUIPMENT NEEDED** — just simple hand tools, and Appliance Tester which we provide at no extra charge.
- ☐ **START SMALL — GROW BIG.** You can start out in your own basement or garage, in spare time. Gradually expand until you open your own shop.
- ☐ **NO NEED TO RISK YOUR SAVINGS.** Many businesses require a sizable investment. But here you can build up a following of customers *first*, then open a full-time shop if you wish to.
- ☐ **EARN $3 TO $5 PER HOUR.** Fixing appliances is a high-paying skill because the demand for trained men is so great.
- ☐ **ENJOY SEMI-RETIREMENT ON A GOOD INCOME.** When you're ready to retire, you can devote a few hours a day to this work. Live and work anywhere you please.
- ☐ **NO PREVIOUS EXPERIENCE OR TRAINING NEEDED.** We tell you and show you everything you need to know, in plain English and clear pictures.

IF YOU'RE like so many men today, you've been "hankering" to start "a little home business of your own." In spare time at first, then maybe full-time later on. Something you'd enjoy — and that pays well. Something that fills an existing need in your neighborhood or town — that "sells itself," without any high pressure arguments — that doesn't take a big investment or elaborate equipment.

This is it—Servicing Electrical Appliances! Now is the perfect time to get into it. Sales of electrical appliances have skyrocketed. Look how YEARLY SALES have risen since 1950: Coffee Makers — from 900,000 to 4,750,000. Room Air Conditioners—from 200,000 to 1,800,000. Clothes Dryers—from 318,000 to 1,425,000. Floor Polishers — from 240,000 to 1,090,000. No wonder that men who know how to service appliances properly are making $3 to $5 an hour—in spare time or full time!

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People need their appliances fixed in good times or bad. Once word gets around that you are trained to service them, you'll have plenty of work.

Your training costs less than 20¢ a day. And you need only the few basic tools you may already have — and an Appliance Tester which we provide at no extra charge. You can work anywhere—in a corner of your basement or garage, even on the kitchen table. If you like, you can open up your own shop, have others work for you. And you can save money by fixing your own appliances.

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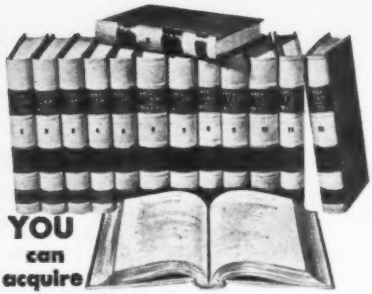

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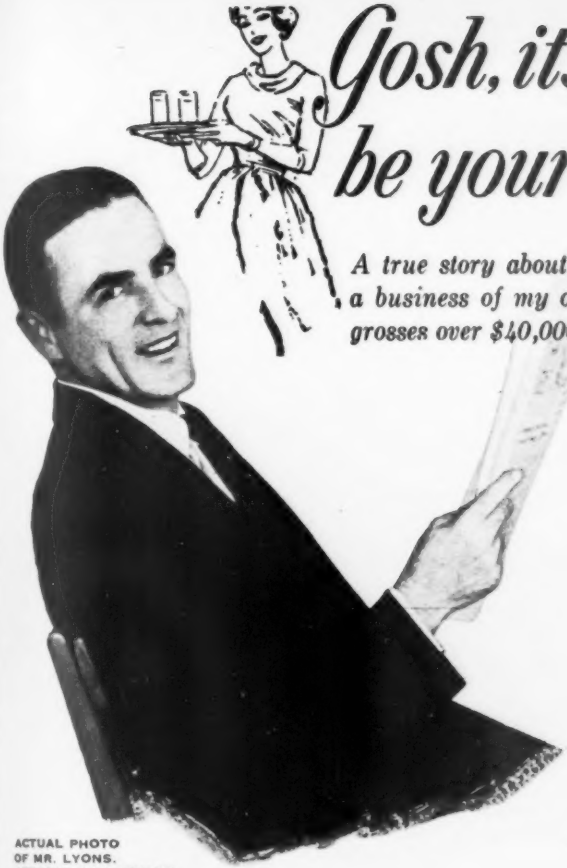

ACTUAL PHOTO OF MR. LYONS. ADDRESS ON REQUEST.

A true story about an ad that got me started in a business of my own three years ago—that now grosses over $40,000 annually!

by Michael J. Lyons

It sure is a wonderful feeling to be your own boss and know the sky's the limit if you're willing to get in and pitch. I know, for I've been on both sides of the fence.

I'd been watching for just the right thing when I spotted an ad offering a Duraclean rug and upholstery cleaning dealership.

Now, just three years since I saw that ad, I have my own $40,000-a-year business.

I investigated the company and found it to be a top level firm respected in the field since 1930.

Unlimited Market Potential

I found that the money-making possibilities in this field are endless. The Duraclean process itself—its safety and efficiency—told me that here was the right combination to make it BIG.

Easy to Start—Training Free

It's easy to get started with Duraclean. Everything is provided—and a complete training course helps you build your new business.

You don't need a shop since cleaning is done in the customer's home or place of business. And with wall-to-wall carpet so popular, "on location" cleaning is really a *must!*

Easy to Get and Keep Customers

Your success in this field is charted with a tested sales program set up by the company. First, it teaches you how to *get* customers. And when we get customers, we *keep* them because of Duraclean's fine advantages. Folks rave most over our no-scrubbing, no-soaking features which mean rapid drying and no-shrinking or texture distortion.

6 Ways to Make More Money

Money-making opportunities are not only in cleaning. You have 5 other services: soil retarding; mothproofing; spot removal; minor carpet repair; flameproofing . . . and 15 home care products to sell, at a nice profit.

Security a Grand Feeling

As I start my fourth year as a Duraclean dealer, I have a profitable repeat business—satisfied customers who keep coming back for more!

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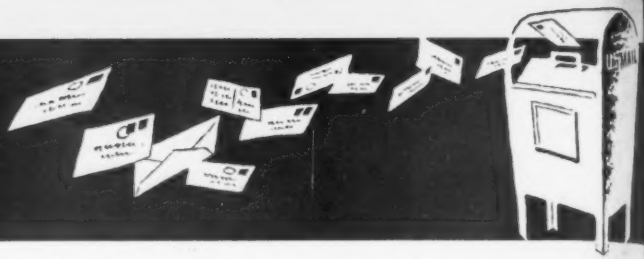
Dear Editor



Address mail to: Letters Editor, MECHANIX ILLUSTRATED, 67 West 44th Street, New York 36, N. Y.

● *Raccoon Fancier*

Could you tell me where I could get a raccoon? I am interested in getting one for a pet but I can't find any place that sells them.

Bob Reading
Vallejo, Calif.

Bob, the Trefflich Bird & Animal Co., Inc., 228 Fulton, New York, N. Y., will be happy to oblige you. However, they stock raccoons only during the summer. But you can purchase an even more exotic animal from them —a coati. This is the South American cousin of the raccoon. He has a slightly longer body and tail and a long flexible snout. These fellows sell for $45 and make very friendly pets. Raccoons are priced at $25 to $35.

● *Dit-Dah Data*

Although I have recently assembled a short-wave radio, I am rather a novice at this hobby and would like some information about it. Are there any books (not too complicated) on short-wave radios? Specifically, I should like to know what a log book is and how it is used and on what frequencies I can locate maritime, aircraft, amateur, police, fire and weather broadcasts.

Anthony J. O'Grady
Englewood, Calif.

One very good book that will answer your question is the Ham Radio Handbook No. 416 (75¢) by Robert Hertzberg. It is available from Fawcett Books, Fawcett Bldg., Greenwich, Conn. When ordering, add 10¢ for mailing and handling.

● *Poopsi-Doll*

Read with interest your article on Poopsi-Doll (Aug. '60 MI), the 590-lb. airplane. You stated that the plane's 125-hp Lycoming engine has an oil capacity of two quarts. Don't you mean two gallons?

B. L. Morris
Amarillo, Texas

We did and we do.

● *Speedball Special*

'Way back in 1956 MI published an article about a wood-bodied, 90-mph sports car called the Speedball Special that could be built for less than $500. If any of your readers still have the plans for this car I would be glad to purchase them for $5. Also, I would like to contact anyone who built it.

James J. Loughlin
21 Ritchie Dr.
Yonkers, N. Y.

● *40-Oz. Plus*

An item in your Science Shorties column (Dec. MI) says "the physical capacity of the human stomach is limited to about 40 ounces." This is only 2½ pounds. My husband can put away a two-pound steak, three helpings of mashed potatoes and vegetables and a whole apple pie. This is closer to five pounds. Is my husband human?

Worried

Does he love you? That's all that matters.

● *Candle Sculptor*

I certainly appreciated your article, Candles For Christmas (Dec. MI), which told how to

[*Continued on page* 16]

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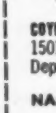

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For the first time science has found a new healing substance with the astonishing ability to shrink hemorrhoids and to relieve pain – without surgery.

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Most amazing of all – results were so thorough that sufferers made astonishing statements like "Piles have ceased to be a problem!"

The secret is a new healing substance (Bio-Dyne®)—discovery of a world-famous research institute.

This substance is now available in *suppository* or *ointment form* under the name *Preparation H®*. Ask for it at all drug counters.

Dear Editor

[*Continued from page* 14]

create candles of various shapes. I became so intrigued with the project that before I knew it I had fashioned a complete candle "village."

Mildred Dempsey
New York, N. Y.

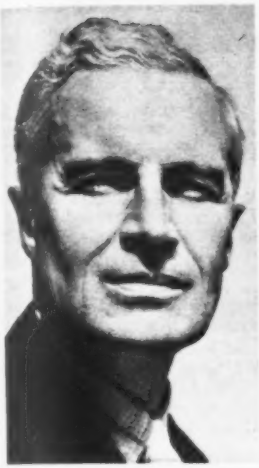
● ***Gab Bouncer***

Those battery-powered gadgets (Infrared Walkie-Talkie, January MI) that enable people to talk to each other by means of infrared radiation look great. Maybe I could get a little peace and quiet around the house if I buy my wife one of these, then stand her in front of a mirror with it so she can talk to herself to her heart's content.

Shelton S.
Ottawa, Canada

SNOW TRACTION

No traction, no action—so this winter carry along a few asphalt shingles to slip beneath the rear wheels in case you get stuck in snow.



I'd like to give this to my fellow men...

while I am still able to help!

I was young once, as you may be—today I am older. Not too old to enjoy the fruits of my work, but older in the sense of being wiser. And once I was poor, desperately poor. Today almost any man can stretch his income to make ends meet. Today, there are few who hunger for bread and shelter. But in my youth I knew the pinch of poverty; the emptiness of hunger; the cold stare of the creditor who would not take excuses for money. Today, all that is past. And behind my city house, my summer home, my Cadillacs, my Winter-long vacations and my sense of independence—behind all the wealth of cash and deep inner satisfaction that I enjoy—there is one simple secret. It is this secret that I would like to impart to you. If you are satisfied with a humdrum life of service to another master, turn this page now—read no more. If you are interested in a fuller life, free from bosses, free from worries, free from fears, read further. This message may be meant for you.

By Victor B. Mason

I am printing my message in a magazine. It may come to the attention of thousands of eyes. But of all those thousands, only a few will have the vision to understand. Many may read; but of a thousand only you may have the intuition, the sensitivity, to understand that what I am writing may be intended for you—may be the tide that shapes your destiny, which, taken at the crest, carries you to a level of personal independence heretofore undreamed of.

Don't misunderstand me. There is no mysticism in this. I am not speaking of occult things; of immutable laws of nature that will sweep you to success without effort on your part. That sort of talk is *rubbish!* And anyone who tries to tell you that you can *think* your way to independence without effort is a false friend. I am too much of a realist for that. And I hope you are.

I hope you are the kind of man—if you have read this far—who knows that anything worthwhile has to be *earned!* I hope you have learned that there is no reward without effort. If you have learned this, then you may be ready to take the next step in the development of your karma—you may be ready to learn and use the secret I have to impart.

I Have All The Money I Need

In my own life I have gone beyond the need of money. I have it. I have gone beyond the need of gain. I have two businesses that pay me an income well above any amount I have need for. One of these businesses is that of putting other men in business for themselves. And, I have the satisfaction—the deep satisfaction—of knowing that I have helped more than three hundred other men find independence from job worries by starting "aide line" business that could be operated from the home in spare time. Since I have no need for money, the greatest satisfaction I get from life, is sharing my secret of personal independence with others—seeing them achieve the same heights of happiness that have come into my own life.

Please don't misunderstand this statement. I am not a philanthropist. Although I may help finance you in a business-like way, I believe that charity is something that no proud man will accept. I have never seen a man who was worth his salt who would accept something for nothing. I have never met a highly successful man whom the world respected who did not sacrifice something to gain his position. And, unless you are willing to make at least part of the effort, I'm not interested in giving you a "leg up" to the achievement of your goal. Frankly, I'm going to charge you something for the information I give you. Not a lot—but enough to make me believe that you are a little above the fellows who merely "wish" for success and are not willing to sacrifice something to get it.

A Fascinating and Peculiar Business

One of the businesses in which I have helped others get a start is a peculiar one. The unusual thing about it is that the product is needed in every little community throughout this country. But it is a business that will never be invaded by the "big fellows." It has to be handled on a local basis. No giant octopus can ever gobble up the whole thing. No big combine is ever going to destroy it. It is essentially a "one man" business that can be operated without outside help. It is a business that is good summer and winter. It is a business that is growing each year. And, it is a business that can be started on an investment so small that, with my help in financing, is within the reach of anyone.

This business has another peculiarity. It can be started at home in spare time. No risk to present job. No risk to present income. And no need to let anyone else know you are "on your own". It can be run as a spare time business for extra money. Or, as it grows to the point where it is paying as much or more than your present salary, it can be expanded into a full time business—overnight. It can give you a sense of personal independence that will free you forever from the fear of lay-off, loss of job, depressions, or economic reverses.

Are You Mechanically Inclined

While the operation of this business is partly automatic, it won't run itself. If you are to use it as a stepping stone to personal independence, you must be able to work with your hands, use such tools as hammer and screw driver, and enjoy getting into a pair of blue jeans and rolling up your sleeves. But two hours a day of manual work will keep your "factory" running 24 hours turning out a product that has a steady and ready sale in every community. A half dollar spent for raw materials can bring you six dollars in cash—six times a day—a maximum daily profit of $33.00.

In this message I'm not going to try to tell you the entire story. There is not enough space on this page. And, I am not going to ask you to spend a penny now to learn the secret. I'll send you all the information, free. If you are interested in becoming independent, in knowing the sweet fruits of success, in becoming your own boss, send me your name. That's all. Just your name. I am not asking you for a penny at this time. I'll send you all the information about one of the most fascinating businesses you can imagine. With these facts, you will make your own investigation. You will check up on conditions in your neighborhood. You will weigh and analyze the whole proposition. Then, and then only, if you decide to take the next step, I'll allow you to invest $15.00. And even then, if you decide that your fifteen dollars has been badly invested I'll return it to you. Don't hesitate to send your name. I have no salesmen. I will merely write you a long letter and send you complete facts about one of the businesses that has now been started by more than 300 men—and several women. After that, you make the decisions. Remember, if you decide to go ahead, I'll help you finance your start.

Does Happiness Hang on Your Decision?

Don't put this off. It may be a coincidence that you are reading these words right now. Or, it may be a matter that is more deeply connected with your destiny than either of us can say. There is only one thing certain: If you have read this far you are interested in becoming independent of jobs and bosses. And if that is true, then you must take the next step. No coupon on this advertisement. If you don't think enough of your future happiness to write your name on a postcard and mail it to me, forget the whole thing. But if you think there is a destiny that shapes men's lives, send your name now. What I send you may convince you of the truth of this proverb. And what I send you now will not cost a penny, now or ever.

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SCIENCE SHORTIES

SUPERSONIC speed (faster than 738 mph, the approximate speed of sound in air) will soon be an almost outmoded term. Get used to *hypersonic*—thats five times the approximate speed of sound in air, or 3,690 mph.

Russian scientists, experimenting with seeds to create plants that are more resistant to cold, have succeeded in getting 30-50 per cent crop increases with cabbages and onions—they say.

Only three per cent of the land surface of the earth is useful for food production.

The national electricity systems of France and Britain will be linked this year by a cross-channel cable. This will permit the two systems to help each other during peak periods of power use in the two countries.

The world-wide birth rate has now reached an average of three babies every second.

In 1960 the United States' 5,500,500 colonies of bees produced a record crop of 253,500,000 sticky pounds of honey.

Bulls don't see red. Only a few mammals see colors at all; apes do, and we do—luckily for the boys who made color TV. People hardly ever *dream* in color except under the influence of drugs.

The record number of pearls found in one oyster is probably held by a bivalve opened in Tokyo; it contained 620.

Duck hunters please note: skunks prefer turtle eggs to duck eggs; kill off the skunks and the snappers increase to prey on ducklings. Bagging the little stinkers may earn you a stinking little bag.

In the U.S. the average woman speaks 175 syllables a minute; the average man 150.

Americans spend $250,000,000 a year on quack cures for arthritis.

Soap bubbles blown with special soaps are being used in a new method to recover uranium, gold and other metals from sea water.

A new jet-flame torch that burns a kerosene-oxygen mixture can shape granite by causing the crystals to split along natural cleavage lines.

Gulls, pelicans and other sea birds drink sea water and lose the excess salt through glands that discharge into the nostrils.

Hibernating venomous snakes pack their most potent poison in the spring.

Allergy sufferers can be allergic to substances they secrete themselves. Children can be allergic to their own mothers.

Leprosy, once believed to result from a leper's touch, is actually one of the least communicable of communicable diseases. •

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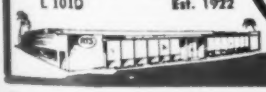

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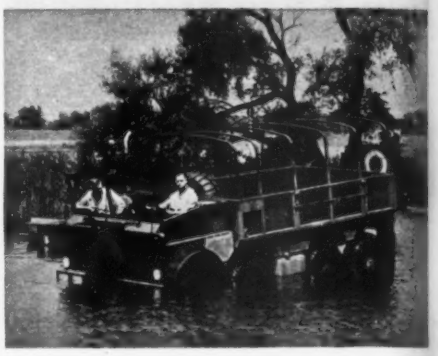
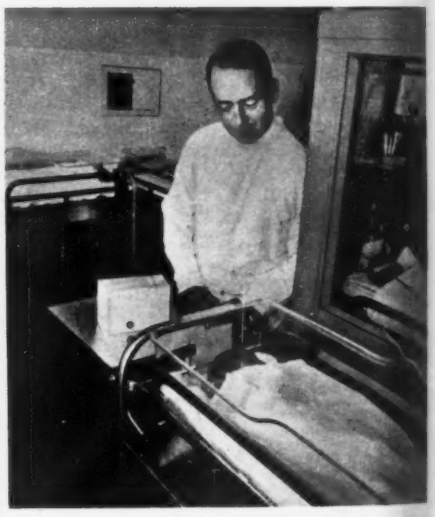
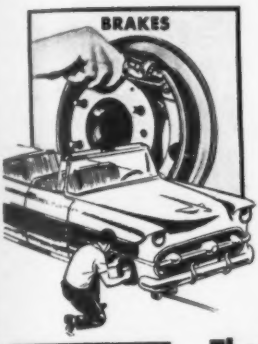
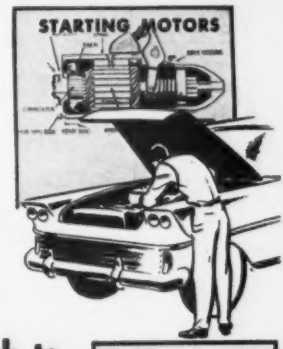


GENERAL MOTORS' new diesel-powered military trucks go on land or water. The 6x6 and 8x8 vehicles—power is transmitted to all six and eight wheels—tote three and one-half and five-ton loads respectively. The vehicles need no chassis lubrication. They go three mph in water, 50 on land, can climb 60 per cent grades, tackle snow, mud and sand.



SECURITONE is a unique heartbeat stimulator invented by Dr. Lee Salk of New York City. Dr. Salk claims that his tests with Securitone—a plastic case the size of a small radio that is placed next to the baby's crib—show that infants who listen to the rhythm and sound of a normal heartbeat, cry less, sleep better and grow up healthier and happier. Research was done at City Hospital, Elmhurst, N. Y. Sonotone Corp. manufactures the heartbeat simulator.





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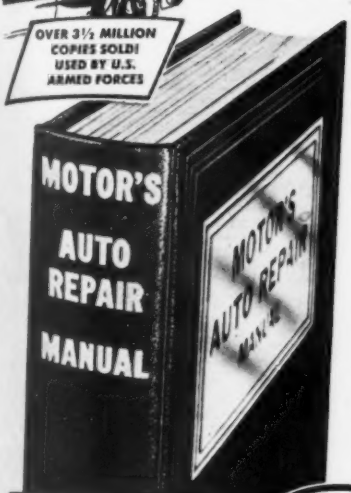

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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Aqua-Glider

James O. Cole of Baton Rouge, La., is building a glider to be towed by a boat. Is the idea practical, he asks, and is there a market for such a sport craft?

By coincidence, the January '61 issue of MI has an article on just this type of plane (Here's The Sea-Glider). It was built by Captain Bill Skliar, an Air Force pilot stationed at Eglin Air Force Base, Fla., who has filed a patent application for the craft.

If such a plane is properly designed, sufficiently portable and priced right, it could be marketed with some success. Check the registration, inspection and license laws regarding gliders with the District Officer of your Federal Aviation Agency at Shreveport or New Orleans. Or write to the FAA, Engineering and Manufacturing Division, Washington 25, D. C.

Automatic Gasoline Pump

Robert Smalheiser of Yonkers, N. Y., believes he can produce a gas pump attachment to deliver a variable but predetermined quantity of gasoline. What is the merit of the unit?

There may be a market for this if it can be produced to sell at the price you specify. However, pumps are in use now—even coin-operated units—which dispense gas automatically, so your market would seem to be a contracting one. Whenever you stop for gas, why not inquire of the owner if he would purchase such a device were it available. Record each comment and the name and address of the station. This is a typical market analysis which will give you some idea as to the demand for such a device. Also investigate Federal and state regulations governing gas pumps.

Milk Dispenser

Gerald Pavlak of Niagara Falls, N. Y., sends drawings and description of a device for dispensing baby's milk. He lists its advantages and wants to know if it's marketable.

There is nothing novel in this design. Remember, space is at a premium in most stores. A store manager can display four times as many ordinary bottles in the same space required for your dispenser, and his profits will probably be greater from the bottles.

Raising Sunken Ships

Donald Roy Quinn of Huntsville, Texas, reports that he has had naval service and knows salvage work. He suggests a huge canopy under which a salvage crew might work. Will it work?

You have imagined an enlarged and fragile version of the diving bell which has been in use since about 300 B.C. To fill your proposed canopy with air would require considerable doing, since air must be pumped into it at a pressure—tremendous at great depths—equal to that of the water around it. In any case it

[*Continued on page* 24]

INVENTOR'S TIP OF THE MONTH

The man who can develop a fully automatic tool sharpener for plane irons, chisels, scrapers and the like should find a ready market. The price should compare favorably to that of electric kitchen knife and scissors sharpeners.

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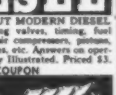

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Invention Clinic

[*Continued from page 22*]

would be difficult to hold such a huge cover in place.

Cost of Patent Search

Mrs. Jessie Saxton of Custer, Mich., asks: "How can you tell whether a patent attorney is reliable? Some advertise their services for $7, others for as much as $75. Does this mean that the more you pay, the better the search?"

Patent attorneys no longer advertise. However, you can depend on the reliability of any registered patent attorney. Some time in the future a list of these will be available from the U. S. Patent Office. Meanwhile, consult your classified telephone directory under Patent Attorneys. The cost for an average search runs from $15 to $25. Chemical and electronic patent searches may cost more. A higher price does not necessarily denote superior performance.

Brake Valve

Dalton R. Lowe of Stayner, Ontario, has invented a valve to prevent the failure of air or hydraulic brakes. When applying for a patent he discovered another device similar to his. However, he feels that there is little similarity between the two because his device has only one moving part instead of several as shown in the other patent. What should he do now?

Go back to your patent attorney and explain the differences. He may then take further steps to protect your idea, though the claims for the other patent may cover any which you hope to obtain. In this event you might contact the first patentee to learn if he would be willing to license you to operate under his patents. Perhaps you can work out a deal with him to share in your improvements. Have your attorney handle the details for such an agreement.

Faucet-Washer Tester

J. F. Hunter of Hamilton, Ohio, wants to know if a better faucet washer has been produced before he proceeds to make a machine for testing different materials for washers.

There are some excellent faucet washers on the market. These have been made of everything from nylon to steel. At least one manufacturer has turned out a never-drip washerless faucet. This would indicate that no practical purpose could be served by any washer-testing machine you might design.

[*Continued on page 27*]

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Invention Clinic

[*Continued from page 24*]

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D. Grenier of Quebec sends diagrams and description of a hydraulic leveling system which is intended to maintain lateral stability of an auto when cornering, and longitudinal stability when accelerating or braking. What do we think of the system?

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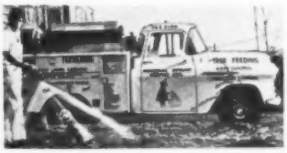

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PATENTS GRANTED

INVENTORS George W. Bohannon of Oak Park, Ill., and Walter Scowcroft of Palos Heights, Ill., received patent 2,953,103 for their idea for an open-aisle railroad coach that quickly converts to provide sleeping compartments.

Kiddies with a yen to inflict some of the real-life miseries of childhood on their dolls will be pleased to learn that Harry E. Barnett of Chicago and Richard E. Birnbaum of Harrison, N. Y., have been granted patent 2,959,891 for their adhesive-backed "stick-ons" which are applied to dolls to make them appear to be suffering from the mumps, measles or broken arms or legs. The patent also covers a miniature crutch and plaster cast.

George W. Cornelius of Portuguese Bend, Calif., was granted patent 2,953,898 for an afterburner apparatus for purifying auto exhaust.

A process for enlarging and hardening fish eggs for use as bait was assigned patent 2,951,761 for its inventor, John Thomas Stephan of Seattle, Wash.

Patent 2,960,679 was awarded Harold W. Atkins, Minneapolis, Minn., for a system of flashing lights designed to help avoid midair collisions. Each of a battery of three lights grouped around a plane's tail flash at rapid, medium and slow intervals to indicate to other in-sight aircraft that they are flying collision, danger or safe courses relative to the first plane.

Anglers who like their fish frigid may soon be cutting holes through the ice using a hollow cylinder with a rotating cutter edge on the bottom. Beauford E. Jones, Jr., of Robbinsdale, Minn., and Alfred H. Huehn of Minneapolis were granted patent 2,955,374 for this device.

The landing space required by future jet aircraft may be reduced, thanks to an invention by Edgar P. Peregrine of Royston, England that reverses the direction of thrust of a jet engine. It has been granted patent 2,944,394.

Slipproof shoes may soon be on the market if the public takes a fancy to the Ice Creeper, a metal spur that fits in the arch of an overshoe. Frank Gau of Detroit, Mich., was granted patent 2,952,927 for this idea. •

A fog dispelling composition won patent 2,962,450 for Egon Elod of Badenweiler, Germany, and Karl Schneider of Basel, Switzerland. Their invention employs wetting agents that convert fog into rain by reducing the surface tension and enhancing the coming together of the large, positively charged fog droplets and the small, negatively charged ones. •

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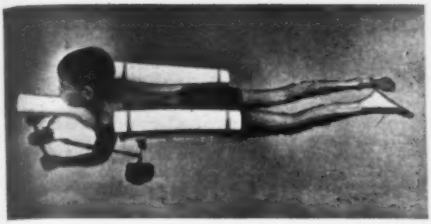

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BUSINESS CARDS
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You can build a profitable business of your own selling America's largest line of low-cost business printing. Big 360-page catalog shows actual samples of hundreds of items used daily by business people. Full-color catalog of advertising specialty items included. Big selection of imprinted ball-point pens selling as low as $8.95 for 100.

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Rush FREE details on how I can get your big line of Printing and Specialties.

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Now available in plans and kits. Easily built and flown by do-it-yourself hobbyist. 3-view drawings may be purchased for $2 or simpler Copter-Glider $1.

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Just think what it can mean to you in dollars and cents, confidence, success, fun to learn a language, speech, statistics, facts, figures, music, bridge, school work, anything—OVERNIGHT . . . while you sleep and learn it FASTER—BETTER.

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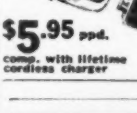

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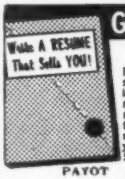

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This new Chest Pull Body Builder develops powerful he-man muscles F-A-S-T. Ideal for the beginner to give him a real start in championship muscularity and perfect for the more advanced body builder to combine with his regular training for faster, all around muscle growth. Body Builder is wonderful for developing massive arms, shoulders, chest and back. Mail your order today. Only $1.00 postpaid. No C.O.D.

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MI Classified Ads

Your advertisement can reach this mail-buying audience of more than a million readers for only $1.10 per word . . . payable in advance (Check or M.O. please) . . . minimum 10 words. Copy to be inserted in May issue must be in the office March 3. Mail to MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y. Word count: Zone number free. Figure one word: Name of state (New Jersey), name of city (New York); sets of characters as in key (14-D); also abbreviations as 35MM, 8x10, D.C., A.C.

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AMAZING GREETING Card Money-Makers! Make $75.00 on 100 Deluxe $1.25 Assortments. Newest Create-A-Card personal greetings for all occasions. 160 fast-sellers. Largest profits; Gift Bonuses. Experience unnecessary. Samples on approval. Exclusive $1.25 Burro Salt-Pepper Cart Free for promptness. Creative, 4401 Cermak, Dept. 510-V, Chicago 23.

START MAKING Money Now. Earn top commissions taking orders for all magazine subscriptions. Friends and neighbors are your prospects. No experience needed. Write for free money-making kit. McGregor Magazine Agency, Dept. 211A, Mount Morris, Illinois.

MEN-WOMEN AGENTS: Sensational new moneymakers—Beautifully hand-painted plastic personalized photo enlargements, compacts, rings, bracelets, lockets, etc. Simply take orders, pocket 40% commission—we deliver and collect. Sales outfit free. Novelco, 3343 North Avenue, Chicago 47.

YOUR OWN business—Suits $1.50; Overcoats 45¢; Mackinaws 35¢; Shoes 12½¢; Ladies' Coats 30¢; Dresses 15¢. Enormous profits. Catalog Free. Nathan Portnoy Assoc., 2109-M Roosevelt Rd., Chicago 8, Ill.

PRINTING, ADVERTISING Salesmen—Excellent moneymaking sideline selling Decalcomania Name Plates, small quantities. Automobile initials. Sign Letters. Free Samples, "Ralco," XL, Boston 19, Mass.

RUN A Spare-time Greeting Card and Gift Shop at home. Show friends samples of our wonderful new 1961 All-Occasion Greeting Cards and Gifts. Take their orders and earn up to 100% profit. No experience necessary. Costs nothing to try. Write today for samples on approval. Regal Greetings, Dept. 44, Ferndale, Michigan.

YOUR FREE copy of World's biggest sales magazine tells you how and where to make more money on your own in selling. Specialty Salesman Magazine, Desk 70, 307 North Michigan, Chicago 1.

WILL YOU test new items in your home? Surprisingly big pay. Latest conveniences for home, car. Send no money. Just your name. Kristee 83, Akron, Ohio.

MAKE EXTRA $75 Cash On 100 boxes new Parchment Charm all-occasion greeting cards, other money-makers. Profits to 100% plus bonus. Samples on approval. Free personalized gift with first order. Southern Greetings, 478 N. Hollywood, Dept. G-58, Memphis, Tennessee.

MAKE PROFITABLE Men's-Women's wear. Sample Free. Sunmade, Brockton 64, Massachusetts.

SELL CHAMPION, AC, Autolite spark plugs. Reconditioned, electroplated, guaranteed 10,000 miles. 100% profit. Free sample. Lee Spark Plug Co., 1608-M Roberts, Houston 3, Texas.

MEN! SHOW wife this amazing offer! Famous nationally advertised Hollywood cosmetics pay 60%. Make $25. day up. Hire others. For free samples, details, write Studio Girl, Glendale, California, Dept. 5013T.

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MAKE $55 A Day clear profit! Sell nationally advertised Royaltone Auto Glaze to car owners, dealers, jobbers. Exclusive territories. Rush name for free sample, details. Royaltone, Inc., Brooklyn 30, N. Y.

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FREE! BEAUTIFUL Mexican Curios! Send 14¢ stamps mailing. Sylviam, Apartado 9036, Mexico City.

AGENTS WANTED, Combination Tools, Details, 10¢. Myers Agency, Marquand, Mo.

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MAKE EXTRA Money—Big Cash Commissions plus premiums for you and your customers. Sell Advertising Book Matches —sensational new Tenorama, Glamour Girls, Hillbillies; dozens others. All sizes —Quick daily sales; big repeat business. Free Master Kit makes selling easy—no experience necessary. Superior Match, Dept. F361, 7530 Greenwood, Chicago 19.

ANYONE CAN sell famous Hoover Uniforms for beauty shops, waitresses, nurses, doctors, others. Miracle fabrics—Nylon, Dacron, Wash 'N Wear Cottons. Exclusive styles, top quality. Big income, real future. Equipment free. Hoover. Dept. C-102, New York 11, N. Y.

START MAKING money now. Every business a prospect. Solicit delinquent accounts. Instructions free. Top commissions. National Credit, 304B Pickwick Bldg., Kansas City 6, Mo.

SENSATIONAL NEW longer-burning Light Bulb. Amazing Free Replacement Guarantee—never again buy light bulbs. No competition. Multi-million dollar market yours alone. Make small fortune even spare time. Incredibly quick sales. Free sales kit. Merlite (Bulb Div.), 114 E. 32nd, Dept. C-74C, New York 16.

IF YOU'RE interested in making money in selling, see the hundreds of exceptional opportunities in Salesmen's Opportunity Magazine. Send name for your copy, absolutely free. Tell us what you're selling now. Opportunity, 848 N. Dearborn, Dept. 19, Chicago 10, Illinois.

WILL YOU wear new suits, sport coats without one penny cost and agree to show them to friends? You can make up to $40.00 in a day even in spare time, without canvassing. W. Z. Gibson, Inc., 500 S. Throop St., Dept. T-426, Chicago 7, Ill.

SEEKING NEW Products? Get my outfit 47 money-making specialties. Latest conveniences for home, car. Send no money. Just your name. Kristee 107, Akron, Ohio.

EMPLOYED MEN! Make $40 extra weekly. Show friends "weatherproofed" Shoes, Boots. Your own shoes supplied without cost. Outfit free. Charles Chester Shoes, Dept. 3125, Brockton, Mass.

SELL NEW Patented Bowling Stance Indicator. Pocket size advertising specialty. Shows the Bowler correct angles for converting all spare possibilities, plus strike positions. Any business or manufacturing firm a prospect. Send $1. for four Indicators and commission details. BSI Sales, 5452 Walker, Lincoln 4, Nebraska.

MAKE UP to $50.00 a day soliciting delinquent accounts. Terrific commissions. Write today. General Finance, 304W Pickwick Bldg., Kansas City 6, Mo.

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FREE! NAME Brands Catalog! Your own high profit business. Sell Name Brands, full or part time. No inventory—no investment. More than 2000 Name Brand items; lowest wholesale prices. Watches, jewelry, cameras, hi-fi, stereo, radiophonos., appliances, housewares, hardware, power tools, luggage, musical instruments, garden equipment, sporting goods, toys, many others. 8 Floors of Name Brands. Million dollar inventory. Orders shipped complete within 24 hours. Send for Free beautifully illustrated catalog Now! Separate wholesale price list. H. B. Davis Corp., Dept. 16, 145 West 15 St., New York 16, N. Y.

$70 WEEKLY—HOME, spare time. Simplified mail bookkeeping. Immediate income—easy! Auditax, 34757E, Los Angeles 34.

EXCEPTIONALLY PROFITABLE opportunity in Tape Recording! Free Information. Baron's, Lynden, Washington.

11,000 NEW PROSPECTS Daily. Baby record books, shoes, albums. Sell mail-order. Use our literature. Write: No-Co-Ro, Capitola 16, Calif.

DRAFTING PAYS Big Money . . . leads to top positions in automotive, aeronautical, construction, mechanical fields. Learn at home in spare time. All equipment supplied. Pay Later Plan. Free Book. Christy Trades School, A-9906, 3214 Lawrence, Chicago 25.

MI Classified Advertisements

WANT TO Make Big Money At Home? $10.00 profit in an hour possible with Invisible Mending. Make tears, holes disappear from clothing, fabrics. Steady year-round demand from cleaners, laundries, homes. Details Free. Fabricon, 6254 Broadway, Chicago 40, Ill.

FREE UNUSUAL moneymaking newsletter reporting amazing income ideas. File D, Box 76254, Los Angeles 5.

$1.00 BRINGS YOU $18.00 Spare-Full Time Home-Business opportunity! Amazing new velvet-spray transforms old ¢¢¢¢¢ lamps, TV-radios, figurines, furniture—anything—into $$$$$ products! Free samples, 50 Business Opportunities Booklet. Send No Money. Flok-Kraft MH, Los Angeles 61.

MONEYMAKING FRANCHISE can be exclusively yours. For free current franchise reviews information write Franchise Newsletter, H, 9 South Clinton, Chicago 6.

BRONZE BABY Shoes: Instructions, Equipment and Mountings for genuine Electroplating Process. Largest Supplier of all Plating Equipment, Supplies. Free Catalog. Hollywood Bronze Supply, Dept. B-5, 1624 East First, Los Angeles 33, Calif.

NEW HOME-IMPORT Mail Order Profitunity! Your mailbox stuffed with money! No selling. No experience. No investment. We supply everything. Free Details. Mail Order Distributors (Import Division) Dept. C33C, 15201 South Broadway, Los Angeles, Calif.

BUY DIRECT from factories. Appliances, cameras, watches! Free details! Cam Co., 6810MI-20th Ave., Brooklyn 4, N. Y.

MAILORDER DEALERS, Beginners, Jobbers, Hobbyists, extra income. Details: Sterling, Box 626-MI, Dania, Florida.

BUSINESS KIT Free! Postcard puts you in business! Complete line 230 shoe styles, jackets! New Discoveries pay Big Commissions. No investment. Send for Free Kit. Mason, Chippewa Falls K-366, Wisconsin.

IMPORT-EXPORT OPPORTUNITY, profitable, world-wide mail-order business from home without capital; or travel abroad. Established world trader ships instructions for no-risk examination. Experience unnecessary. Free details. Mellinger, Dept. T753, Los Angeles 24, Calif.

GROW ORCHIDS At Home. Profitable, fascinating. Successful Home grower explains special light, temperature and humidity conditions Orchids need. Free—full details plus 3-month subscription to "Orchidian" magazine. Orchids, 100 S. Vermont, Los Angeles 4.

$3.00 HOUR—HOME, sparetime, assembling pump lamps. Easy. Free Details. Ougor, Caldwell, Arkansas.

FREE PICTURE Folder, "How to Make $3,000 Yearly, Sparetime, Backyard, Raising Earthworms!" Oakhaven-45, Cedar Hill, Texas.

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 2, 715 Ensor St., Baltimore 2, Md.

$250.00 WEEK SPARE time profit possible. Earn at home with new fascinating Printing method. $5 starts you—send no money now. Free Confidential Facts and Valuable sample. Screen-Print, MH, Los Angeles 61.

PLATE BABY shoes, jewelry, gifts, bronze and colored pearl. We finance. Free booklet. Thomas, 11029 South Vermont, Los Angeles 44.

INCREDIBLE NEW "Table-Top" Machine manufactures over 15,000 saleable products. Also laminates, encases, moulds and plates in bronze, chrome, or copper. 20¢ materials produce $10.00 products. Free Confidential Details and Home-Business Plan. Plasti-Form, Dept. MI-3, Gardena, Calif.

FREE REPORT: "609 Odd, Successful Businesses." Box 1001-MIT, Evanston, Ill.

LEARN SEWING Machine repairing. To $125 weekly. Sparetime. Supplies. Add to present business. Write today! Taylor Service, Box 2126, San Bernardino, Calif.

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COLORGLAZED CONCRETE pottery made without molds. Patented method. Cemetery products, novelties, files. Basement leaksealing. Moneymaking projects. Booklets, details free. Men only. National Pottery, Grand Rapids, Minnesota.

MARKETS EVERYWHERE. Make Artistic concrete birdbaths, pottery. Best coloring. Home workshop. Hundred varieties. Free pictures. Hollywood Cementcraft, 8527-E Wonderland, Hollywood 46, California.

"218 CARTOON MARKETS" Make $50.00 a cartoon in your spare time. Know what to draw and where to sell it. Send $1.00 for sixty pages of know how. Maler; Dept. 6C; 11620 Lansdowne; Detroit 24, Michigan.

BIG MONEY Raising Nightcrawlers Soilless Way. Free Literature. Charlie Morgan, 116M, Bushnell, Florida.

RE-CAST JUNK batteries into new. Latest achievements. Battery Laboratories, Bayou LaBatre, Alabama.

OPPORTUNITY TO earn $15,000-$30,000 annually. Franchise protected. Granted on $12,500 basis. Live at home. No merchandise to buy. Selfemployed. One of most exclusive and noncompetitive Businesses in United States and Canada. Send for free explanatory booklet. Harrell & Company, Box 8-F, Louisville, Ill.

SELL CHAMPION, AC, Autolite spark plugs. Reconditioned, electroplated, guaranteed 10,000 miles. 100% profit. Free sample. Lee Spark Plug Co., 1608-N Roberts, Houston 3, Texas.

BAKE NEW Greaseless Doughnuts In Kitchen. Sell stores. Free recipes. Irving, 3605 South 15th, Minneapolis 7, Minnesota.

SELL DIAMONITE Gems; more brilliant than diamonds. Credit arranged. Catalog 10¢. Diamonite, 2420-X 77th, Oakland 5, Calif.

LIQUID MOLDING Rubber, Free Sample Shellcraft Supplies. Chaney, 1907-B East Road, Jacksonville 11, Fla.

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FRANCHISES MAKE Profits! Have your own prosperous franchise business. Opportunities nationwide for distributors, dealers, agency operators. Write today. National Franchise Reports, MI-528, 333 North Michigan, Chicago 1.

WANTED: HOME producers, to be subcontractors. Cast plastic products for manufacturers in our Clearing House Service. Thousands of easily-made items required. Cash in at home, without previous experience. Plastic Service Associates, Dept. 3-MI, East Boston 28, Mass.

PIANO TUNING learned at home quickly. Tremendous field! Musical knowledge unnecessary. Be independent! Information free. Empire School of Piano Tuning, Champaign, Ill. (Founded 1935).

INVISIBLE REWEAVING: $5-$10 per job possible reweaving burns, tears, mothholes. Spare-full time. Free details. Skil-Weave, Dept. RC-363, 335 W. Madison, Chicago 6, Illinois.

LEARN PROFESSIONAL TV Servicing in one week! Fabulous new simplified system. No big expense. No studying. No tools or equipment. Spare, full time. Own your own big profit business! Save! Amazing but true! Free! Write, TV Systems, Dept. EC-153, 1038 So. LaBrae, Los Angeles 19, Calif.

MAKE DURABLE building plastic easily. Waterproof, fireproof, economical. Bays Laboratory, Chinle, Arizona.

OPERATE RESTAURANT Or Diner. Free Booklet reveals plan. Write School of Restaurant Business, Dept. KC-722, 335 W. Madison, Chicago 6, Illinois.

$75.00 WEEKLY POSSIBLE mailing catalogs. Roe, 2317C Marshall, Chicago 23, Ill.

GROW MUSHROOMS. Cellar, shed and outdoors. Spare, full time, year round. We pay $4.50 lb. dried. We have 29,000 customers. Free Book. Mushrooms, Dept. 183, 2954 Admiral Way, Seattle, Wash.

MAKE $46 FROM Square Foot Plywood; Jigsaw necessary. Free Details. Woodet, Bridgewater, Mass.

$200.00 MONTHLY. SPARE Time. With Tablesaw, Bandsaw or Jigsaw. Write. Holiday House, C3800 Harney, Vancouver, Washington.

MAKE $50.00 A week part time. Learn how to own and operate your own collection agency. Send $1.00 for complete instructions. National Collection System, Dept.-M, Box 594, Flint 1, Michigan.

BELOW WHOLESALE — 750,000 items. Free Lists. Dean's, Box 40-MX, Elberton, Georgia.

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FREE: YOUR own Personalized Stationery by Sunshine when you sell only $10 worth to others. Each lovely piece carries name and address, or is handsomely initialed. Informals in plain or floral treatments. Earn Easy Money for yourself or your club with new Sunshine Stationery or exciting Sunshine Greeting Cards. Send for free portfolio and Card Samples On Approval Now to W. S. Robbins, Sunshine Art Studios, 20 Warwick Street, Springfield 1, Mass.

MAKE BIG Easy Profits making costume jewelry at home in spare time! Quick, easy to make; easier to sell! Details Free! Don-Bar, 3511 W. Armitage, Dept. C-211, Chicago 47, Ill.

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DETECTIVES—EXCELLENT Opportunities. Experience unnecessary. Detective Particulars free. Write, George Wagoner, 125-J West 86th, New York 24.

Classified Advertisements MI

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START YOUR Own Business On Credit (U.S. and Canada). Your own boss. 13% Dealers sold $5,000 to $25,500 in 1959. We supply stocks, equipment on credit. 200 home necessities. Sales experience unnecessary. Pleasant profitable business backed by world-wide industry. Write Rawleigh's, Dept. C-U-MOM, Freeport, Illinois.

MAKE $5,000 YEARLY sparetime raising mink, chinchillas, nutria, etc. Free booklet reveals proved plans. Write: Furs, 588 Mt. Pleasant Road, Toronto 3, Canada.

MAIL TRADE Magazine has moneymaking opportunities galore. Sample 25¢. Donovan, 79-M Greenbelt, Levittown, New York.

BUSINESS OF your own. Earning potential as high as $40,000 annually. Issued on $12,500 base. No merchandise to buy. Send for free explanatory booklet. Harrell & Company, Box 8-FF, Louisville, Ill.

START BIG-PAY Business At Home in spare time. No experience needed to operate little table-top machine for bronzing baby shoes. Make $5.46 profit on every pair. Full particulars free. Send postcard to Mason, 1512 Jarvis, Room CM-4-A, Chicago 26, Ill.

$1,000. MONTHLY POSSIBLE, raising Earthworms—African Giants! Backyard, Garage, Basement. Complete illustrated booklet, explains raising, feeding, packing, marketing. Send 25¢! Ozark Worm Farm-4, Willow Springs, Missouri.

A SECOND Income From Oil Can End Your Toil! Free Booklet And Oilfield Maps. No Obligation. National Petroleum, Panamerican Bank Building-MI, Miami 32, Florida.

MAKE MONEY Writing Short Paragraphs! No tedious study. I tell you what to write, where and how to sell; and supply list of editors buying from beginners. Many small checks add up quickly. Write to sell, right away. Send for free facts. Benson Barrett, Dept. C-78A-A, 7464 Clark, Chicago 26.

MAKE EXTRA Money—Big Cash Commissions plus premiums for you and your customers. Sell Advertising Book Matches —sensational new Tenorama, Glamour Girls, Hillbillies; dozens others. All sizes —Quick daily sales; big repeat business. Free Master Kit makes selling easy—no experience necessary. Superior Match, Dept. FX-361, Greenwood, Chicago 19.

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MAIL LETTERS Featuring Real Merchandise—Get $10 orders in every mail—$8 profit. Everything furnished. Write: The Mailerette, 1502 South Lowell, Santa Ana, California.

EASY TO start Rubber Stamp business at home in spare time. Make up to $9.80 an hour without experience. Facts Free. Write Roberts, 1512 Jarvis, Room CR-4-A, Chicago 26.

NEW!! PLASTIC Laminating Machines. Pleasure or Profit. Details. D. Burr, 330 East Centre, Kalamazoo, Mich.

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FOREIGN EMPLOYMENT Information. Work overseas. Travel, adventure. Europe, Africa, Asia, Canada, Alaska. Earn as much as $1,600 monthly. Construction men, truck drivers, clerks, teachers, professionals, etc. Fabulous opportunities. Most complete information, application forms, etc. Sent by return mail same day received. Send $2.00 to Dept. M, Foreign Bureau, P. O. Box 512, New Orleans, Louisiana.

FOREIGN JOBS—Latin America, Alaska, Canada, up to $1500 monthly. Up-to-date 1961 Foreign Service Directory gives complete information; hot list of firms hiring for Military and Civilian Construction, Aircraft, Oil, Exporters-Importers, Mining. How-When-Where to apply. 13th successful year. $1.00. Global Reports, Box 8873-MI, Los Angeles 8, Calif.

LATEST INFORMATION — Civil Service jobs—mechanical, clerical, professional —overseas, U.S.A. List $1.00. Civil Service Bulletin, 115R Haypath Road, Plainview, New York.

MAKE EXTRA Money selling advertising matchbooks. Free catalog and sales outfit. Matchcorp, Dept. MI-31, Chicago 32.

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INVESTIGATE AUTO Accidents — Earn $750 to $1,000 monthly. More investigators urgently needed. Car furnished; business expenses paid. No college education necessary. No selling of any kind. Pick your own job locality. Meet interesting, important people. We train you at home in spare time. You keep present job until ready to switch. Write for Free Booklet. No obligation. Liberty School, Dept. 101, Libertyville, Illinois.

FREE PICTURE Folder, "How to Make $3,000 Yearly, Sparetime, Backyard, Raising Earthworms!" Oakhaven-3, Cedar Hill, Texas.

VENDING MACHINES—No selling. Operate a route of coin machines and earn amazing profits. 32-page catalog Free! Parkway Machine Corporation, Dept. 16, 715 Ensor St., Baltimore 2, Md.

DETECTIVES—MAKE Secret Investigations. Interesting occupation. Write, George Wagoner, 125-J West 86th, New York 24.

HOUSEWIVES WANTED! Big money. Spare or full time cake decorating and candy making. Turn your kitchen into a gold mine. Complete instruction, learn and earn at home. Write for free facts: Candy And Cake, Dept. 892, Fallbrook, California.

$5,000 FROM HALF Acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, Sperling, Manitoba.

MAKE MONEY Writing Short Paragraphs. Information Free. Barrett, Dept. C-78B-A, 7464 No. Clark, Chicago 26.

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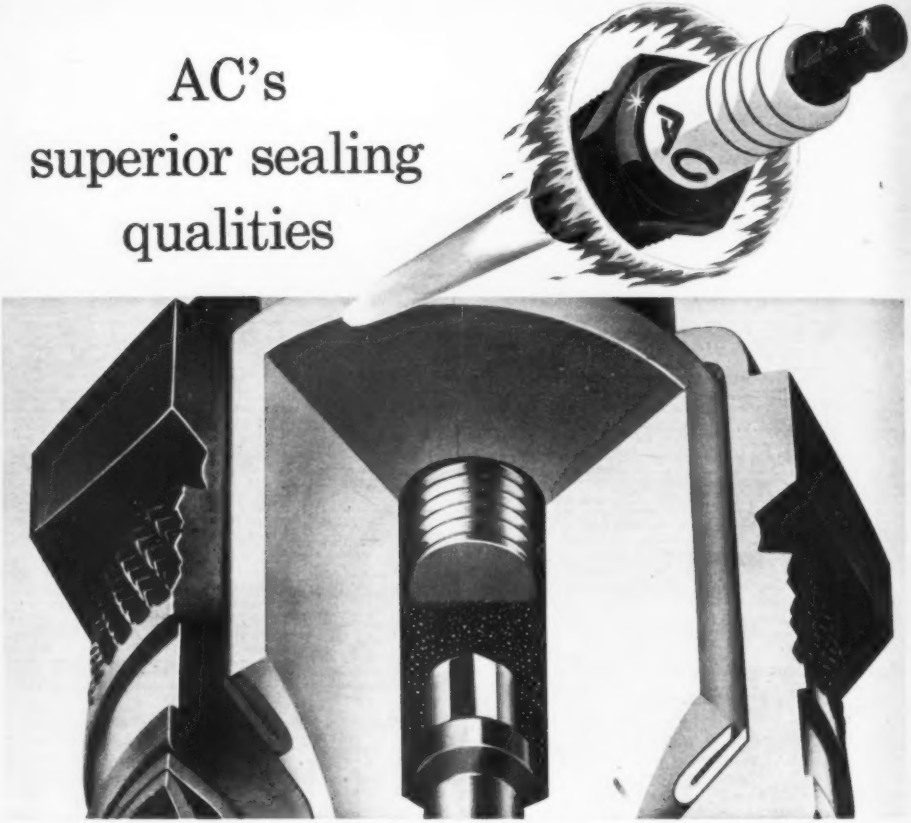


positively protect against combustion gas leakage and engine-damaging pre-ignition

With AC Spark Plugs you get superior gas sealing features that assure longer peak spark plug performance, maximum engine efficiency and economy.

First of all, there is AC's exclusive copper-glass conducting seal that fuses the terminal screw and center electrode to the insulator in a gas-tight bond. Then there is AC's famous shell shrinking process that tightly compresses gaskets placed between the upper and lower shoulders of the insulator to prevent gas leakage between insulator and shell.

Combustion gas leakage causes spark plugs to overheat, resulting in rapid electrode wear, engine-damaging pre-ignition and eventual spark plug destruction. AC Fire-Ring Spark Plugs give you full protection against these dangers—do a better job than ordinary spark plugs using cements or compacted powder seals. Next time your car needs a spark plug change, get top performance and smooth, long-lasting power by getting a new set of ACs.

AC SPARK PLUG THE ELECTRONICS DIVISION OF GENERAL MOTORS

AC Fire-Ring spark plugs

They must be the best!

MAIL FOR McCAHILL

UNCLE TOM ANSWERS HIS MOST INTERESTING LETTERS IN THIS COLUMN. WRITE TO HIM AT *MECHANIX ILLUSTRATED*, 67 WEST 44TH ST., NEW YORK 36, N. Y.

● *Last week Dad traded our '57 Pontiac on a '60 Corvair. The dealer told us the valves were worn so bad he had to throw the heads away. The reason why our engine was so worn, according to him, was that we had used cheap gasoline in it. Is he pulling our leg?*

Tom Burkemper
Old Monroe, Mo.

Sounds to me like the dealer threw the wrong head away.

● *While on safari recently in Africa, we were surprised to find a small herd of short, bull-necked giraffes. What do you think of that?*

LeRoy Travers
Philadelphia, Pa.

I think that Canadian Club gets everywhere —or was your white hunter Jack Daniels?

● *Since car manufacturers are stressing the importance of safety equipment, I have a challenge for them. Why not equip cars with a safety switch and a gauge built into the steering wheel to measure the amount of alcohol in the air? Then when the driver got behind the wheel after having too much to drink, a switch would lock the starter, preventing the car from being put into motion, thus keeping the drunken drivers off the highways.*

Mrs. Carl Wray
Cullman, Ala.

A lot of my pals would go right out and buy diving helmets with an out-the-window exhaust attachment. The guys who couldn't afford the helmets would turn blue from holding their breath.

● *This is the fourth letter I've written to you in ten years, and as you've never yet answered the first one I don't expect an answer now. I just want to know who do you think you are? Movie stars, the biggest, answer all their mail but you are too important to answer yours. In my book this makes you a jerk.*

Ken Bowdoin
St. Louis, Mo.

You may be right about the jerk part but here are the facts. Most movie stars have paid staffs just to take care of their mail, and the stars themselves rarely see any of it. I don't have a staff because I can't afford it. Besides, the majority of letters I get are of such a nature that they preclude answering by any gal stenographer I've ever known. For example, most letters contain from one to a dozen technical questions. Movie stars are usually asked, "What do you like for breakfast?" Few secretaries are prepared to answer what to do with a defunct rear end on a '55 Leprosy Six. Also, just to pay Uncle Sam's grabby tax kids I'm on the road most of the time, leaving little opportunity for answering mail—if that's any consolation to you. For example, this is being written in New Orleans. The day after tomorrow I'll be in Los Angeles, the end of next week in Chicago, then New York, and Florida the following week. The only thing I can assure you who write me is that I personally read all letters. But if I tried to answer each one I'd be bankrupt in a month because I'd have no time left to write for publication.

● *Won't a straight eight outwear a V8? In the straight design the pistons don't rest their weight on the bores and rings, causing excessive wear and oil consumption.*

Robert Hayden
Ellington, Conn.

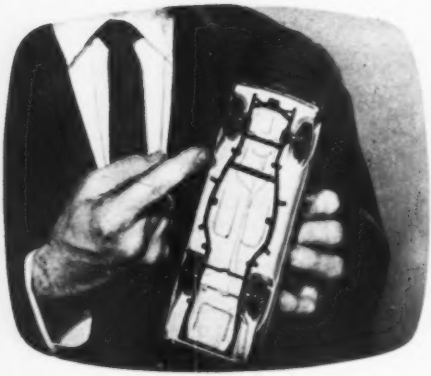
Competitors started making claims about egg-shaped cylinder wear due to the V design nearly 50 years ago with the first V8 Cadillacs. They renewed the argument again with the first V8 Ford in 1932. To prove that this wear factor is hogwash, consider engines such as the Volkswagen in which the cylinders are completely horizontal, yet they are noted for

[*Continued on page* 50]

TV's Professor Jonathan Karas tells why

The 1961 Ford

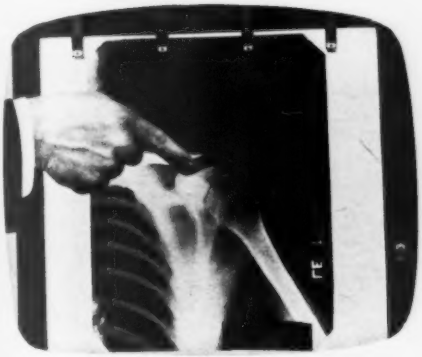
Professor Jonathan Karas, physicist at Lowell Technological Institute, uses an X-ray to demonstrate—as he does on Ford's TV shows—a remarkable feature of the '61 Ford.



"Other cars require a chassis lubrication every one to two thousand miles costing up to $45 in 30,000 miles. But Ford's famous ball-joint has a special sealed-in lubrication, very much like the human shoulder joint."

"Here it is, the crucial part of Ford's suspension. This unit is a ball-joint, protected by molybdenum disulfide grease, a new lubricant that Ford helped develop. It forms a molecular bond with the metal."

is built to go 30,000 miles between chassis lubrications



"This is a human shoulder joint. The reason it works so well and so dependably is that nature provides what is, in effect, a sealed-in lifetime lubrication."

"And this is a photograph of a ball-joint on the '61 Ford. Let me show you how Ford engineers took a tip from nature to give you more carefree driving."

"And this polyurethane ring, another Ford development, seals in the grease so well that Ford can go 30,000 miles between chassis lubrications. And these cost only about $4—take about 20 minutes."

"Sealed-in lubrication is just one feature that makes the '61 Ford *beautifully built to take care of itself*. Two others are: self-adjusting brakes, and Full-Flow oil filtration . . . you change oil only every 4,000 miles."

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Just connect the ESB ACTIVERTER to a battery and you can have 110 AC instantly, anywhere, for many hours. You can plug in portable electric power tools, an electric blanket, electric lights, even a television set! A flick of a switch and the ESB ACTIVERTER fast or slow charges 6 or 12 Volt batteries.

Compact, Rugged, Truly Portable

The compactness of the ESB ACTIVERTER design makes it possible to have a 12 Volt storage battery, an inverter, and a battery charger all in one self-contained and portable package. One PAK-O-POWER ACTIVERTER model provides a source of 110 Volt AC, with an output rating of 500 Watts, in a package the size of a portable picnic cooler! Because solid-state electronic components are used throughout, ACTIVERTERS are both rugged and lightweight. There are *no* moving parts, *no* vibrators.

4 Sizes — from 150 to 500 Watts

MODEL I-152 INVERTER — Inverter only, operates from direct connection to 12 Volt battery or through cigarette lighter socket of cars with 12 Volt systems. Output ratings: Intermittent Use — 150 Watts, 1.5 Amps. AC . . . Continuous Use — 125 Watts, 1.2 Amps. AC. Shipping Weight: 8 lbs.

MODEL IC-252 ACTIVERTER — Inverter-Charger operates from direct connection to 12 Volt battery. Output ratings: Intermittent Use — 250 Watts, 2.3 Amps. AC . . . Continuous Use — 200 Watts, 1.8 Amps. AC. Shipping Weight: 15 lbs.

MODEL IC-202P PAK-O-POWER — Inverter-Charger with compartment for 12 Volt battery. Completely self-contained unit. Output ratings: Intermittent Use — 250 Watts, 2.3 Amps. AC . . . Continuous Use — 200 Watts, 1.8 Amps. AC. Shipping Weight less battery: 22 lbs.

MODEL IC-506S PAK-O-POWER — The Multi-Service Inverter-Charger-Car Start unit, with large 12 Volt battery compartment and Car Start leads. Completely self-contained with built-in fast and slow charger — Charging rate: 60 Amps. for 6 Volt, and 40 Amps. for 12 Volt batteries. Output ratings: Intermittent Use — 500 Watts, 4.0 Amps. AC . . . Continuous Use — 300 Watts, 2.5 Amps. AC. Shipping Weight less battery: 55 lbs.

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The Electric Storage Battery Co.
Automotive Division — Dept. MI-2
P.O. Box 6266 - Cleveland 1, Ohio

I want to use 110 Volt 60 Cycle AC for _____

_____

Please send me ESB ACTIVERTER information without obligation.

Name _____

Street _____

City _____ Zone _____

State _____

Mail For McCahill

[*Continued from page* 47]

their longevity and, as they say in the Bronx, "are air-cooled yet."

● *Looking through back issues of MI I noticed an article in which you predicted that by 1960 station wagons would equal sedans in number. I also noticed that you said that by 1960 Lincoln and Cadillac would both have station wagons and that air conditioners on cars would be as common as heaters. Weasel out of that, Baldy!*

Terry Dale
Ottawa, Canada

Just sent away for a new weasel suit.

● *Over the past 15 years I think I've managed to read everything you've written, between my barber shop, dentist's office and local library, but I've never paid for a copy of MI yet. I believe this must be a record.*

Arthur R. Little
Bethlehem, Pa.

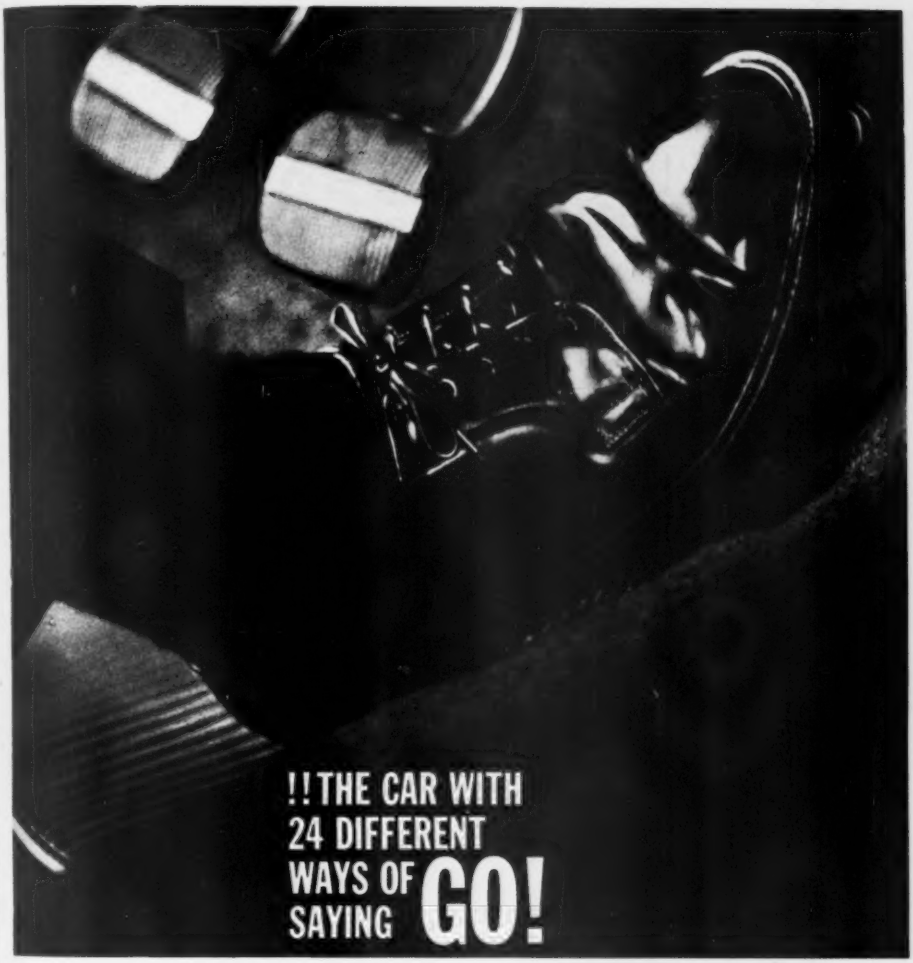
If it is, it's the kind of record we can do without—and I suggest you don't ask for a rebate.

● *Do you honestly believe that American car builders make their products as well as they can? Is there any excuse for so much shoddy workmanship in assembly and sleazy quality of parts? I bought a $6,000-plus car and the trunk lining is actually made of cardboard! The car is full of rattles and all body moldings are poorly-fitted. If there is a real reason for all this I, for one, would like to know about it.*

Bryan R. Herbst
Buffalo, N. Y.

All American manufacturers could make their cars better than they do and here are a few reasons why they don't: The cost engineers are given the ball to keep prices down and competitive. This means cutting corners wherever possible; thus the cardboard lining in your trunk. Not too many attempts are made to save money on engines, transmissions or rear axle assemblies, therefore these units all have a longevity factor equal to a Rolls-Royce or the most expensive Mercedes. Where Detroit usually starts to cut corners hard is on original equipment tires, cheap shock absorbers, dimestore instruments and sleazy wiring, body material and trim and many replacement items such as mufflers and tailpipes. Tie this up with don't-give-a-damn labor practices and you wonder how they come out as well as they do. You'd be surprised what an extra hundred dollars in final

[*Continued on page* 52]



No other car going's got a choice of power teams like this new Chevy! A full two dozen engine-transmission hookups to get your foot into. Eight engines, 6 or V8. Five transmissions, automatic or stick shift (including 4-speed). You'll find the combo for you, for sure.

You can torque-tailor your Chevy to your type of going with any one of 24 power teams. Engines as thrifty or as high-spirited as you want. From standard 6 or V8 on up through six other robust V8's*—power to please the most demanding driving foot! Transmissions? A choice of standard 3-speed Synchro-Mesh stick shift and four options*—4-speed manual, Powerglide, Turboglide or Overdrive. (And both stick shifts have new gear ratios performance-matched to the engine you choose.) Just pick your kind of go and you can put it in any one of Chevrolet's 20 models for '61. Whatever you choose, with Chevy's Full Coil Jet-smooth ride, you'll go in comfort you can't match anywhere else at anywhere near the price.

... Chevrolet Division of General Motors, Detroit 2, Michigan.

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*Optional at extra cost

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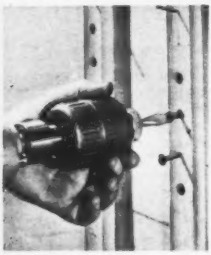
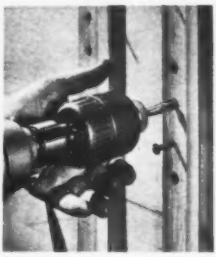


2. Place screw in hole; drive it easily with slight forward pressure . . . hold housing in fingertips.



3. Your fingers act as a clutch . . . starting, stopping action instantly. Simple and safe . . . no blisters.

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Mail For McCahill

[*Continued from page* 50]

servicing fees would do for all our cars. But Detroit knows that the guy who sells his bananas the cheapest will sell the most, brown spots and all.

● *You say (October '60 MI) "No other car can make this statement." Thought cars could do almost anything but talk. Is this something new?*

Tom Booz
Fullerton, Calif.

You mean you never heard a clutch chatter or a brake squeak or a rear axle hum or a gear whine or an exhaust bark or an engine cough or a dry bearing scream or a supercharger howl? You just haven't been paying attention. Cars talk in dozens of different ways.

● *I would like to ask you a favor. For some time I have been trying to get photographs of American cars by writing to the companies and requesting photos. I've only once met with success and that was from American Motors. Unfortunately, the big companies won't even answer my letters. Would you be good enough to see if you could put in a word on my behalf at all the major car companies?*

Michael Simon Rychter
24 Mona Rd., Darling Point
Sydney, Australia

It looks to me as if they might be ashamed of their cars, aside from Romney's boys. Come on, Detroit, send the man some pictures.

● *I am a salesman and travel between 45,000-60,000 miles a year, so tire life is important to me. I've been told that if I bought the most expensive premium tires it would cut my tire bill in half in the long run. Is this true?*

Gerald Thebault
Birmingham, Ala.

The only positive way we know of to cut your tire bill in half is to buy a motorcycle. Seriously, it has been my experience that the top-grade premium tires won't cost a dime more, and perhaps less, if you intend to rack up such big annual mileage.

● *I notice you make a lot of wisecracks about the Federal Income Tax so I've got a suggestion. As there is very little chance that the Washington Idiots will simplify our tax forms and regulations in the future, why don't all high schools and colleges start tax classes? The average boy who goes to college expects to be a success and if he turns out*

[*Continued on page* 54]

28 CARS WANTED IT!
TEMPEST WON IT!

(Motor Trend's CAR OF THE YEAR Award goes to Pontiac's Tempest!)

The Motor Trend Magazine Car of the Year Award to Tempest marks the second time in three years that the Pontiac Motor Division has received this honor. The editors who selected it are (left to right): Robert Ames, Associate Editor. James Miller, Managing Editor. Don Werner, Editor.

These men edit one of America's leading car magazines—Motor Trend. What they know about cars can help you buy your next new car with complete confidence. They study all the different makes. Compare. Drive. Then they make one award for the year. The Motor Trend Car of the Year Award. This year these editors voted solidly for Pontiac's newcomer—the Tempest. The one car that will give the car buyer top performance, ride and economy for his nickel. Read what these experts say!

Don Werner—"We studied the design features of 28 American cars. The Tempest pulled ahead of the whole crop of '61 cars. The flexible drive shaft is a fantastic innovation. It's the most sensible, dependable power train we've seen."

Bob Ames—"Equalizing the weight on the front wheels and the weight on the rear wheels (with the front engine/rear transmission) gives the Tempest great traction and ride. Pontiac engineers scored a great breakthrough with the Tempest."

Jim Miller—"The Tempest 4-cylinder engine and the triple alloy steel drive shaft team up as a smooth, going combination. I had to look under the hood to convince myself they hadn't sneaked in a V-8. And that 4-cylinder engine should do wonders for gas economy."

Take it from this group of sharp automobile experts. They don't throw roses unless they mean it. Tempest took the Car of the Year Award because it's a winner. Check the facts! 110 to 155 h.p. from a gas-saving 4-cylinder engine! Big car balance = big car ride! Independent wheel suspension. Rear transmission. 15-inch wheels at no extra cost! Priced with the compacts. See your Pontiac dealer.

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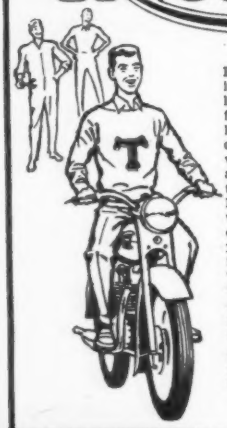

CYCLES FOR '61!

For something extra special in power-on-wheels take a look at the new Triumphs for 1961. This "Big Choice" line covers the entire range of motorcycle speed, maneuverability, stamina and all-around performance! Choose the model that suits you best. From easily-handled lightweight to full-powered, dual carb. OHV vertical twin, you're off to a new mechanical speed age with a Triumph! Ask your TRIUMPH dealer for a FREE demonstration ride. Mechanical specs and prices for any model, yours for the asking.

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Mail For McCahill

[*Continued from page 52*]

that way he must have a good knowledge of taxes in order to defend himself. How do you feel about this, Uncle Tom?

G.H.P.
Omaha, Neb.

Some economic courses do include tax instruction but, as my tax lawyer tells me, petty tax regulations change so often during the course of a year that it's almost a full-time job for an expert just to keep up with them. However, a basic tax course should be of value and so should a course on stocks and securities.

● *Why do you get better mileage on some gas than others, under the same driving conditions?*

Norman E. Hirt
Tigerton, Wis.

For the same reason some cannons shoot farther than others—more oomph.

● *You may "head for the cellar" but did you ever get there? I weigh 270.*

C. I. Allen
Elmhurst, Ill.

If the situation is desperate enough, I could cram my bulk into a mouse hole.

● *Just read your new book, Hawaii, and thought it was great.*

Harry F. Huber
New York, N. Y.

My friend and neighbor, Jim Michener, will be glad to hear that as *his* new book, Today's Sports And Competition Cars, has been moving a little slowly.

● *What is being done or has been done about the transmission hump on the newer cars? I drive a '57 Plymouth and that hump is the biggest romance buster-upper I've ever seen. Maybe I need Advice To The Lovelorn?*

T. L. Brubaker
Derry, Pa.

You may find the answer to your problem in the Workshop Manual.

● *I've been reading your articles for years and submit that I am undoubtedly your oldest reader. I was 97 on January 18, 1961.*

George A. Fletcher
London, England

Thanks for your letter but, believe me, I haven't been writing *that* long. Hope I'll still be able to make it up to a typewriter and that you'll still be reading it for many more years.

[*Continued on page 56*]

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the plugs that power more aircraft the world over!

More as many car makers specify Champions for dependability. Above: Rambler American.

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Mail For McCahill

[*Continued from page* 54]

● *I want to know if you had to wear any make-up when you were on the Jack Paar show. I think make-up is for sissies.*

Charles Evans
Newark, N. J.

Aside from strapping on a load of fat and shaving the top of my head so I would look bald, I was my own natural self.

● *I read an Associated Press release in the* Orlando Sentinel *that a State Trooper in South Carolina killed one of your valuable dogs and then charged you more than 50 bucks for the damage to his car. Sorry to hear about your losing one of your dogs, but just what happened? The item sounded like you'd been "given the business."*

Phil Johnson
Orlando, Fla.

I was "given the business," Phil, make no mistake about that. I trust it wasn't a typical example of southern hospitality but here's what happened. I had spent the night in a motel in Summerton, S. C., got up and took my four dogs for a run shortly before daylight. There was a big field in back of the motel which seemed a safe place to run them. But when I called the dogs back, just three of them returned. Moose, who was born under my desk five-and-a-half years ago, had strayed off. We found his body by the side of the road, about 200 yards from where I'd let him out.

I asked a gas station operator at an all-night truck stop if he had seen Moose get hit. He said yes, a state trooper had killed him and that the trooper was in a diner-type place having coffee. I looked the trooper up and asked for an explanation. He said he hadn't seen the dog in time. I told him I'd take care of the body and gave him my name and address. Jim McMichael and I wrapped Moose's remains in a tarpaulin and put him in the back of the station wagon for his last trip to Florida where we eventually buried him. I went back to my motel and some time later we got under way.

Many miles down the road, two South Carolina State Highway Patrol cars pulled my car and the wagon over to the side of the road. One was the trooper who had killed Moose, John B. Humphrey, and the other, in the second patrol car, was Trooper S. H. Gore. The two troopers told me that when the patrol car hit Moose it had dented Humphrey's front bumper and that *I* was responsible! I pointed out to Gore that I hadn't

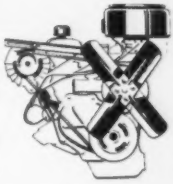
[*Continued on page* 58]

1961 Lancer

The best thing that ever happened to the 6-cylinder engine

When Chrysler Corporation developed the new Economy Slant Six Engine, they set it at a 30° angle for good reason—a bigger manifold system. This new design provides freer breathing, helps give you 20% more "go" on 15% less gas than our previous sixes.

A new, lightweight, 3-speed automatic transmission, the TorqueFlite Six, designed especially for the Economy Slant Six, gives the added pep of a torque converter, plus the smoothness and economy of a third forward speed.



This new engine and new transmission are available in Plymouth and Dodge Dart models, with smaller versions in the Valiant and Lancer. Let a drive bring out the difference great engineering makes.

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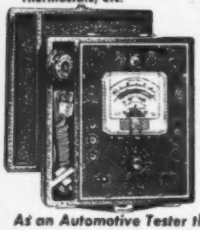

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Mail For McCahill

[*Continued from page* 56]

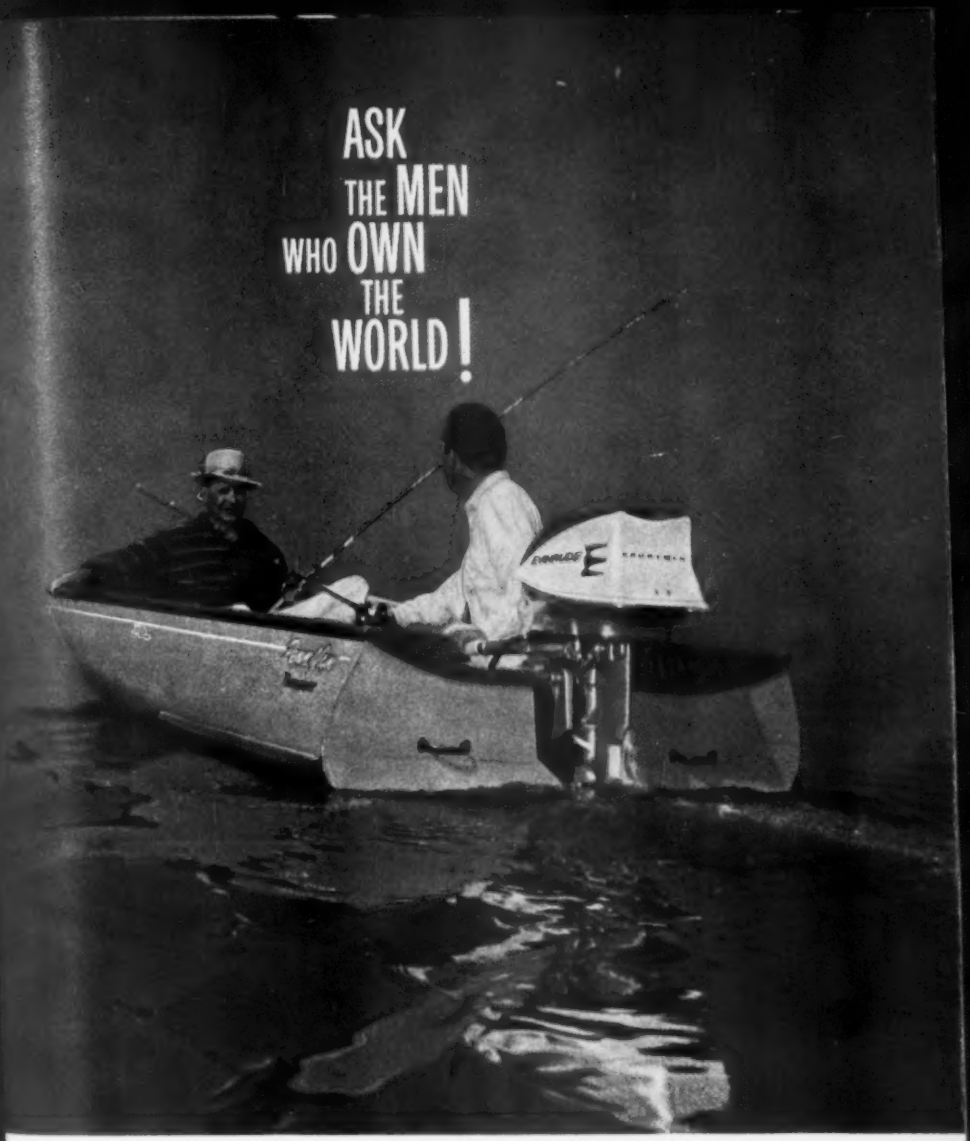
had to look the trooper up in the first place and could merely have put Moose's body in the station wagon and nobody would ever have known whose dog it was. Gore answered, "That's true but now we *do* know it's your dog and that's the difference." So, I told the troopers that I would sign a paper saying I'd pay repairs for the dent in the bumper. This wasn't good enough. Although I showed them at least a dozen of the best credit cards in the nation, proving that these corporations thought I was trustworthy, this wasn't sufficient for Trooper Gore.

He insisted that I return north to Manning, S. C., to a Ford dealer's for a damage estimate and that I pay the bill before leaving. I told them I didn't want to go back, as Manning was ten miles north of where I'd started out that morning. I suggested we go to the Ford dealer in the next town south, still in South Carolina. Gore muttered something about its being "in the wrong zone." When I insisted that I didn't want to go back but wanted to get the dog's body to Florida as quickly as possible, I was given the choice of coming back peaceably or under arrest, which in my book is no choice at all.

At Manning, I had to wait some time for the Ford dealer to open. The estimate, which I had to pay in cash, was $54.31. I doubt if the dealer lost any money on this repair job to a 1959 Ford, as it looked to me like a big ten-dollar piece of work at most. What burns me isn't the money but the fact that they killed my dog and then wouldn't take my note that I'd be responsible but forced me to go through this long return-trip-and-estimate jazz. If they had run over and killed my wife, or one of Jim McMichael's kids, I wonder if they would have done the same thing? I'm also wondering if I had killed a prize bird dog belonging to South Carolina's Governor Ernest F. Hollings, if I mightn't have been charged with failure to have my car under control.

Moose was actually named Silent Knight II (after Joe, whose A.K.C. registered name was Silent Knight: you old-timers will remember my great Labrador who was killed back in '54). Moose was born in 1955, had an excellent field trial record as a Derby dog and was without a doubt the greatest pheasant dog I ever shot over. He was the clown and true enthusiast of all my dogs and was the favorite of all my friends who knew them. I still own his mother and father who were with us on the trip but they are now both much too old ever to produce another Moose.

—*Tom McCahill*



ome things only fishermen know The boil-
, furious rush of a hell-bent bass. The warm,
k promise of the world at dawn. The weird,
d cry of a night-courting loon. Fresh-caught
lleye sizzling over a hickory fire. The shim-
ring aurora on a clear October night. The
t expectant cast after a musky follow. A full
moon on a molten gold horizon. The
thing speed of an all-out bonefish run. The
e-deep warmth of an Indian Summer sun.
ll this and blessed quiet, too. The quiet, competent whisper of a sound-sealed Evinrude. Rugged, reliable, responsive power—yet so smooth there's not a trace of tingle in the steering handle. Your kind of motor—designed *by* fishermen *for* fishermen. Ask your dealer how you can own the world—starting this weekend!

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How can Merlite offer such a daring guarantee? Because MERLITE LIGHT BULBS have a fantastically longer-burning life. They burn for years and years, give longer service than ordinary bulbs. Users save good money year after year . . . practically do away with the time and trouble of replacing burned-out bulbs!

This Daring NO-TIME-LIMIT FREE REPLACEMENT GUARANTEE Does ALL of the Selling FOR YOU!

If you knew that, by buying **MERLITE LIGHT BULBS** today, you would *never again* have to put out another penny for light bulbs, would you buy them? Of course you would—and so will every person to whom you say the 14 magic words: **"ONCE YOU BUY MERLITE LIGHT BULBS—YOU NEVER HAVE TO BUY LIGHT BULBS AGAIN—NEVER!"** Every home needs at least 12 to 24 or more **MERLITE BULBS** to replace old-fashioned short-life non-guaranteed bulbs in ceiling fixtures and lamps in every room. 25 to 100 Watt sizes sell for only 89¢ each; 150 Watt bulbs sell for $1.19. Best of all, you make up to 120% profit on cost. In only a few spare time hours you can pocket $50.00 and more profit. You can start in spare time and you may soon decide to devote full time to this hottest new money-maker in years!

Make Biggest Profits Selling to Retailers

Sell to retailers for resale and make the most money. We'll supply you with **MERLITE LIGHT BULB Self-Selling Displays** (shown at right) —at no cost—and you can place them in stores—any store: drug, grocery, super market, novelty store, gas station, etc. You give retailers a profit of 40% on their sales and you still make a pretty penny for yourself. Once you set up a display you do absolutely no selling. All you do is collect big repeat profits by restocking Merlite Bulbs once a week or so. A retail route can pay you a fortune!

FREE! Money-Making Details and "No-Risk" Offer

Mail coupon below for Complete Illustrated Outfit describing your tremendous money-making opportunity with Merlite Light Bulbs . . . plus amazing "No-Risk" Extra Profit Starting Offer, so you can prove to yourself you have the most fabulous money-maker of the age . . . or your money back. Everything sent **FREE** and without any obligation whatsoever. So **MAIL COUPON TODAY!**

MERLITE INDUSTRIES, INC., DEPT. C-10C.
(Light Bulb Div.) 114 E. 32nd St., New York 16, N. Y.

MERLITE INDUSTRIES, INC., Dept. C-10C.
(Light Bulb Division)
114 East 32nd St., New York 16, N. Y.

Please rush Complete Illustrated Outfit, describing my tremendous money-making opportunity with Guaranteed Merlite Light Bulbs . . . plus Special "No-Risk" Extra Profit Starting Offer—all FREE and without any obligation whatsoever.

Name.....

Address.....

City.....Zone.....State.....

Just a Few Months NEW and Already One of the Hottest Money-Makers For Men Everywhere—Even Spare Time!

Averages $12 an Hour

"Merlite Bulbs are the answer to a salesman's prayers. They're fantastically easy to sell. Working only part time, I have averaged $12.00 per hour."

Philip Smith, Maine

Sold 178 Bulbs First Afternoon

"The first afternoon I sold 178 bulbs. Am very pleased with reception we get from customers. Will you please ship my next order at once."

W. E. Foust, Arkansas

Makes $8.20 an Hour in Just Spare Time

"These guaranteed Merlite Bulbs surely sell. I've averaged $8.20 per hour for the time I've spent with them. That makes a nice income and wish I could sell full time."

L. C. Benedict, Virginia

PASSENGER SEATS on the new supersonics will probably be mounted on swivels so that the passengers will remain in a vertical position during the steep take-offs and descents. TV sets will offer either a view of terrain or conventional TV programs in windowless cabin.

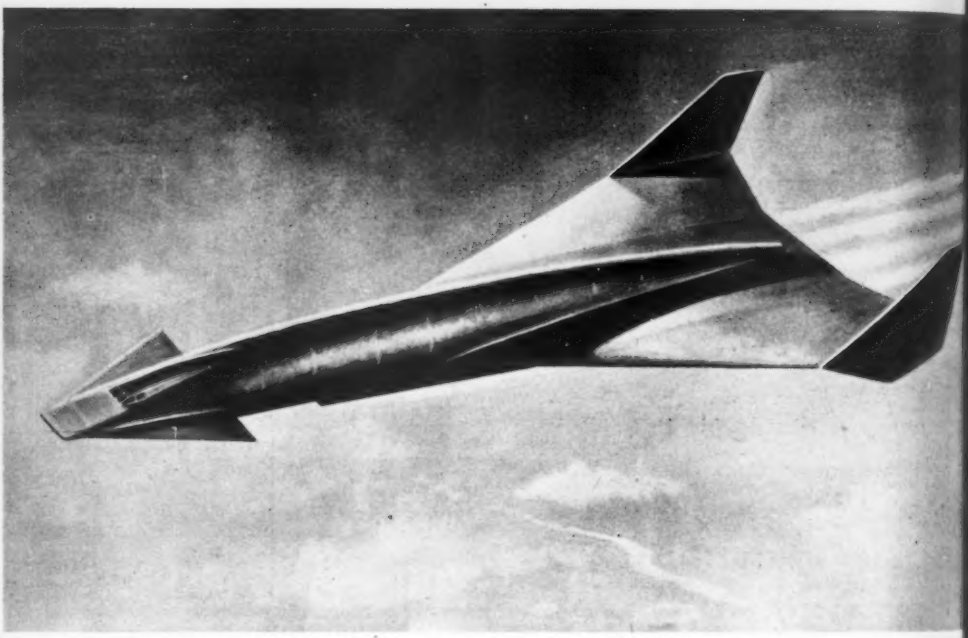
NEW SUPERSONIC AIRLINERS WILL FLY...
35 MILES A MINUTE!

By James H. Winchester

SUPERSONIC flight for the air traveler—from New York to Los Angeles in 90 minutes, from New York to Paris in two hours—is the next big step in our rapidly advancing air age.

Today, even as the newest jets change the pattern of world airline service, aircraft manufacturers in the United States, France, England and Russia are well advanced with plans and designs for a Mach 3, or 2,000-mph airliner. That's about 35 miles a minute! Estimates, by industry and government sources, as to when such an aircraft will go

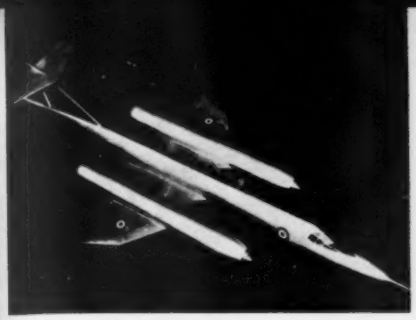
THE AUTHOR of this article, James H. Winchester, has won many awards for his aviation and space reporting. He was nominated for the Pulitzer Prize in 1951 for his stories on the use of helicopters under fire in Korea. As staff writer for King Features Syndicate, he averages between 50,000 and 75,000 miles of flying annually. He is 43, married, has two children. He makes his home in Pleasantville, New York.



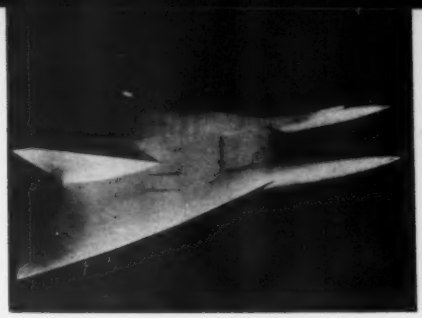
IN ITS STUDIES of supersonic airliners, Convair Division of General Dynamics Corp. produced this unusual design for a Mach 3 transport that would cruise at about 60,000 ft.

into actual operation vary anywhere from 1965 to 1980. My own estimate is that the supersonics will be in service on the world's airlines by 1970.

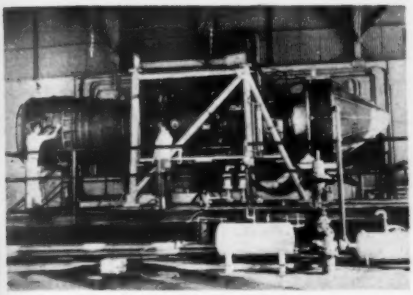
The first supersonic airliner will not be a highly radical airplane. The fuselage will be longer than today's commercial jets but the wing span will be less because the wings themselves will be swept-back in delta design. The supersonic will be constructed mainly of titanium or stainless steel which can withstand the high temperatures created as it slices through thin air at 60,000 to 80,000 feet. It will carry between 130 and 160 passengers, depending on the seat layout, and will be used on routes of no less than 1,500 or more than 3,500 nautical miles in length, mainly because of economic reasons. Jet engines, most probably the J-58 or J-93 which are currently being developed for military use in our supersonic B-58 and B-70 military bomber programs, will be used for power. These are reported to be in the 30,000-pound thrust class.



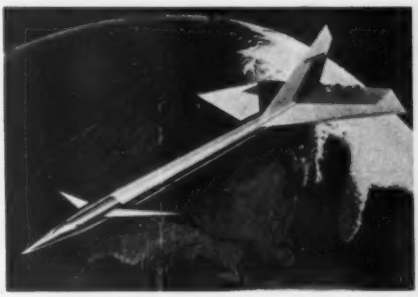
BRITAIN'S new Bristol T-188, designed to test Mach 2 flight, has stainless steel skin.



POSSIBLE design for 2,000-mph airliner carrying 130 is a Bristol Siddeley plan.



FOUR Pratt & Whitney J-58s may power supersonics. J-58 has 30,000-lb. thrust.



LOCKHEED'S design for supersonic would carry 90 passengers at 2,200-mph speeds.

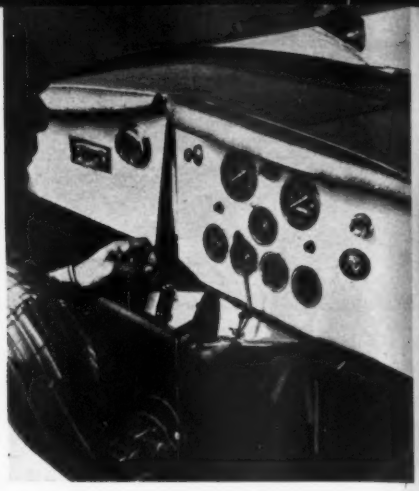
As a specialized, long-range vehicle, the supersonic—which will weigh approximately 500,000 pounds, fully-loaded—will operate in conjunction with contemporary jet airliners. They will use the same airports and air terminal facilities as today's jets. With their added power they may, indeed, use shorter runways for take-off.

But life for passengers aboard the supersonics will be far different than aboard today's jets. The cabin probably will be windowless—at 60,000 to 80,000 feet, where the plane will cruise, the sun is piercingly brilliant and the sky above it midnight black. At 12 to 15 miles above the earth, the sun's glare will actually be painful. A solid-wall passenger cabin, too, would eliminate the need for special bracing and strengthening of frames around windows, a vital problem in the altitudes where increased structural safety will be all-essential.

Instead of windows, each passenger seat may be equipped with individual TV screens, commanding a view from the airplane in all directions. A "sight-seeing channel" would give each air traveler an unobstructed downward view of the terrain over which the plane is flying or an over-the-shoulder view from the cockpit as the pilot brings the plane in for a landing. Other channels could provide reception of conventional TV programs, the sound coming from small individual speakers mounted in the seat headrest. Or taped entertainment programs could be fed into the system. A full-length feature movie—which lasts just about 90 minutes—might occupy passengers the entire time of a coast-to-coast trip. Because airport-to-airport times, even for trans-Atlantic flights, will seldom be more than two hours, elaborate meal services may well be eliminated.

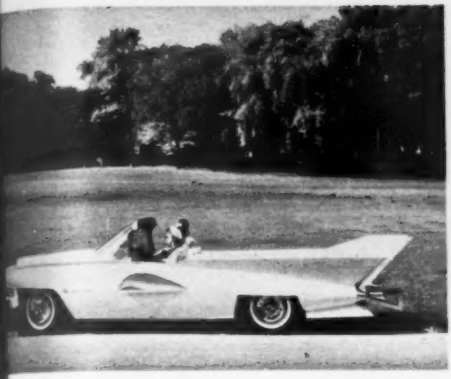
Airport noise and sonic booms will be two large problems in connection with the supersonic transport. Engine noise may be expected to submit gradually to improvements in engine and noise suppressor design. Sonic boom noise, however, [*Continued on page* 166]

$20,000 DREAM CAR HAS NO STEERING WHEEL

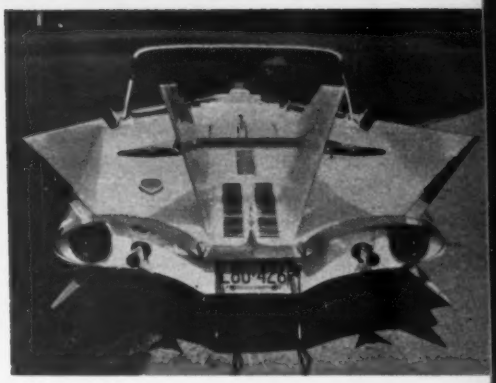


DRIVER sits in middle of car with steering apparatus in place between his knees.

BESASIE may be a strange word to you, not the name of an automobile, surely. But to people around Milwaukee the name means something very special. Ray Besasie and his sons Joseph and Ray Jr. team up to build cars that are way, way out. You may recall the Car Of Tomorrow that appeared in



WAY-OUT-FINS make no concession to the fin-trimming car designers have been doing.

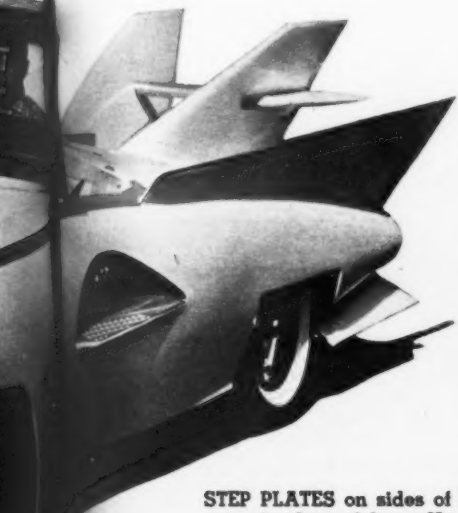


AIRPLANE tail assembly plus insect eyes and high rudders create distinctive stern.

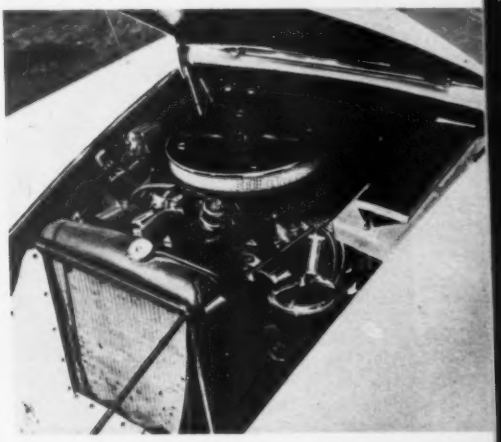
February '59 MI. That one featured the steering wheel in the middle of the dash. The Besasies drove it around the country and finally sold it to a sportsman in Arizona. Their latest effort, which they call the Besasie Explorer, puts the driver in the middle of the seat again and dispenses with the steering wheel.

Joseph, who works with Brooks Stevens Associates, the industrial designers, designed the Explorer. Ray and Ray Jr. built it in the family garage. Materials ran them up a bill of $5,000; their labor, at $5 an hour, adds $15,000 to production cost.

In place of the usual steering wheel the Explorer has a hydraulic lever system that allows the driver to steer with either hands or knees. The Besasies claim the car will accelerate from zero to 60 in six seconds and top out at 140 mph.—*William H. Nichol*



STEP PLATES on sides of body serve in place of doors. No more open doors caught on sidewalks!



ENGINE is an eight-cylinder modified Cadillac, 350 hp. Transmission is Hydramatic.

AT WORK on one of his rice-grain landscapes, Mr. Kawai relies on what he calls his "spiritual eye" and the sense of touch to guide the movements of his brush. He uses a magnifying lens only when viewing his art.

HE PAINTS RICE GRAINS

WHAT? You say this is hard to read? Piffle! Shujo Kawai invites you to spend an evening curled up with some good rice seeds inscribed with lovely Japanese odes. Mr. Kawai's hobby is painting and writing on grains of rice. The miniscule cereal "canvases" of this 29-year-old citizen of Kyoto, Japan, now total over 1,000 and include numerous water-color landscapes.

The manner of Kawai's painting is no less remarkable than the results. He first places a rice grain in a tiny divot in his linoleum working board. Using an extremely fine brush, he makes a sketch on the grain, then shades it in with colors. The artist has employed as many as six different hues for a single painting. His average time to complete a painting on rice: 90 minutes.

—Dave Jampel.

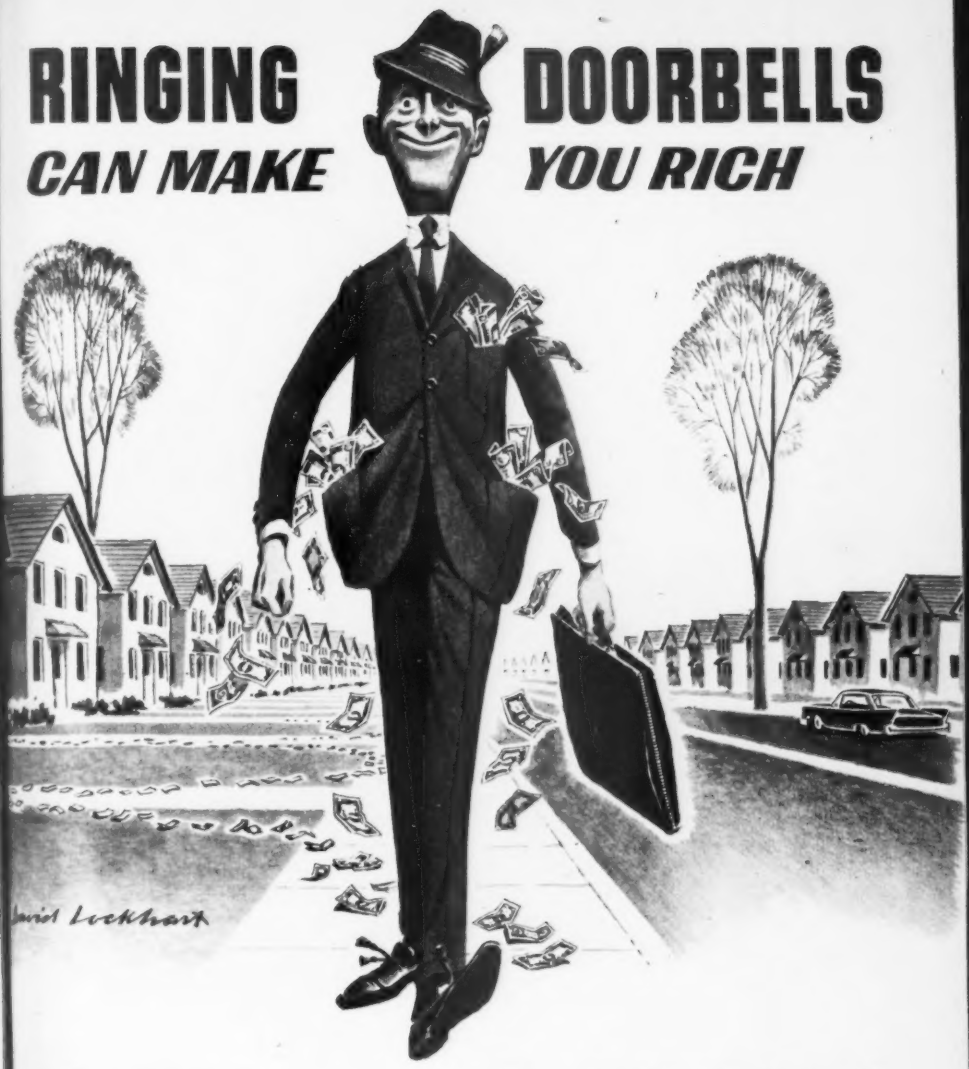
MAGNIFIED rice grain reveals inscription of the English alphabet in two even rows.

JAPANESE PAGODA is the subject of this rice-grain painting, magnified many times.

ARTIST KAWAI uses his left index finger to steady his brush-wielding right hand.

PASTORAL SCENE is encompassed on this rice grain. Kawai also paints on soy beans.

RINGING DOORBELLS CAN MAKE YOU RICH



By Lester David

HUNDREDS of thousands of men and women, young and old, are cashing in on the new boom in door-to-door selling.

Jimmy Dyer, a young law student, did it with tableware in Washington, D. C. He started with a bicycle and in less than a year swapped it for a Cadillac because his first year's income was a fat $15,000.

Robert Gaudette, 23, did it with kitchenware in Lowell, Mass., where he had been working as a shoe cutter and part-time gas station attendant. Now he's making $240 a week.

Rudy Valente did it with costume jewelry in New York City. He was earning $45 a week as a Park Department employee. Today he and his wife count their income at $30,000 a year.

New studies by university schools of business and trade associations disclose that door-to-door selling has now taken

its place as one of the nation's major industries, with sales running into the billions. But the real significance of this rapid rise is in the opportunities it offers to the ambitious man (or woman) seeking a high income from a minimal investment.

Door-to-door selling is one of the few remaining businesses a newcomer can enter without extensive training and on the slenderest of shoestrings. Professor William McKeon, New York University marketing authority, reports, "There is probably no other field where the rewards are so directly tied up with the efforts put forth and where the opportunities for reward are so rich."

There are now 1,500,000 people engaged in selling articles on the doorstep. Many earn between $10,000 and $20,000 annually. Spare-time incomes of $100 a week are not uncommon. Thousands of young people are paying their way through college by direct selling. Older workers, too, are finding bonanzas in the field.

Many a famous success story has come out of the direct-selling field. A man named A. C. Fuller started making brushes in a shed behind his house and then went out and sold them to housewives. The rest is history.

COMPANY PREXIES, themselves ex-salesmen, often spend a day in the field selling.

NEIGHBORHOOD home parties account for $400,000,000 worth of sales every year.

J. R. Watkins sold his own liniment; now the 92-year-old company he founded is one of the world's largest, selling extracts, spices and toilet articles to millions.

Avon Cosmetics has been in the business nearly three-quarters of a century. Fashion Frocks, Hoover, Electrolux and countless other firms sell their products door to door.

One of the representatives of the younger generation of face-to-face salesmen is 37-year-old Herman Perl of Maplewood, N. J., who today is president or chairman of the board of 16 companies.

Perl originated the idea of recording weddings, confirmations and other family events, packaging them and selling them as albums. He formed a small recording company in which he was album designer, recording technician and, of course, door-to-door salesman. From that he moved to other areas, all in the doorstep field, finally clicking big when he originated fashion shows held in private homes. Within 18 months he was heading up a $470,000 annual business employing 150 demonstrators.

Perl was on his way. Today he is president of Fire Detective, Inc., which sells fire detection devices, and chairman of the board of the Charlex Realty Corp., which does a thriving business in

ONE YOUNG door-to-door salesman started out on his bicycle to sell tableware. Just one year and $15,000 later he traded in the two-wheeler for a brand new Cadillac.

Florida homesites. Total sales of Perl's companies come to $25,000,000 annually.

"When a man makes a decision to buy," says Mr. Perl, "he likes to make it in the security of his own home. The salesman who comes to the home and anticipates the buyer's needs is the pioneer who has the best chance of making the sale."

Then there is Owen K. Murphy, a former pharmacist's mate, who converted an old frame house near Adamsville, Pa., into a tiny factory. From there, aided by a staff of three, he began manufacturing those vibrating devices that eased tired and aching muscles. That was a little more than a decade ago. Today Murphy heads the Niagara Therapy Corp. whose four manufacturing plants employ 800 persons and have a network of 3,500 dealers and salespeople. Sales of Murphy's massage equipment are expected to top $40,000,000 this year. The first device was sold door to door, and so are the latest.

Want to know more about this fabulous industry and how you can fit into it? Here are the key facts, in question and answer form.

What sort of products are being sold door to door these days?

Virtually everything. No longer is the business restricted to brushes, costume jewelry and toilet articles. Today, astonishing as it sounds, higher-priced stuff is outselling less expensive merchandise. You can order a $1,000 electronic fire protection system installed in your home and sign the contract with a ten-cent ball-point pen—both bought from door-to-door salesmen. They hawk everything from overcoats to bras and girdles, hearing aids to ear muffs, military uniforms to lacy underwear, encyclopedias to comic books, life insurance to cemetery plots, roofing materials to basement playroom plans, cookbooks to cooking ware, and practically anything you need for your garden, workshop, pet or car.

Aren't these salesmen for the most part itinerant peddlers and fly-by-nights?

By no means. A recent study conducted by the National Association of Direct Selling Companies discovered that "the direct salesperson is a substantial and desirable citizen. He has attended high school and 27.9 per cent have gone to college. Generally, they attend church, vote and pay local taxes." Almost four-fifths have children and half the men have been in military service. The door-to-door salesman of today is a well-groomed, Madison Ave.-type carrying a leather briefcase. Often he will leave only some literature and a sample, then return later to take your order. [*Continued on page* 168]

COVER STORY

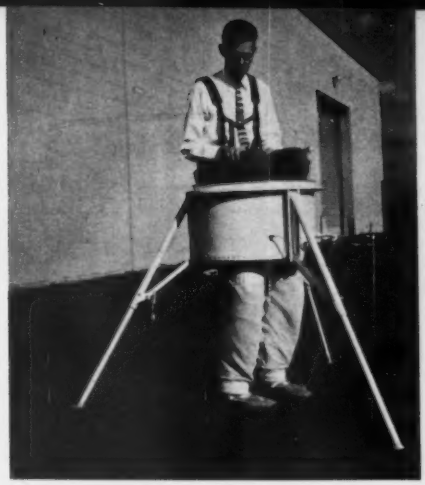
HERE'S WHAT THEY'LL WEAR ON THE MOON

SPACE SUIT encases this lunar explorer setting out with radiation counter and antimagnetic hammer across moon's surface.

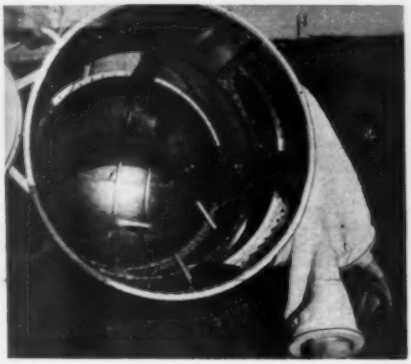
A TWO-PIECE aluminum suit for moon wear has been designed by Republic Aviation. The apparatus maintains proper pressure, temperature, humidity. An oxygen supply and carbon dioxide absorbers keep the man inside breathing easily. The wearer has controls for these functions as well as a radio communication unit, food and waste storage bins, searchlight control, an electric power supply, rest tripod and a built-in seat. The moon's weak gravity will allow wearer to toddle about easily. •

SHOULDER HARNESS holds up the bottom half of the space suit.

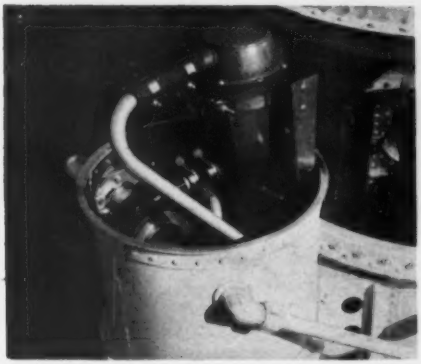
DOUBLE-SOLED safety shoes will make it easier for astronaut to walk on the moon.



RETRACTABLE stanchions can be extended to allow wearer to sit down in the suit.



INTERIOR of top half of space suit shows spotlight control and full viewing window.



TANK attached to rear of suit encloses mechanism to purify and recirculate air.

TRANSISTORIZED transceiver in suit permits communication with mother vehicle.

OXYGEN TANK installed in bottom half of suit supplies oxygen to air for four hours.

LIVING IN THIS IS A BALL!

LIVING in a ball can be fun. Round house has a combination living room-bedroom, a bathroom and a kitchen. There are also cabinets for storage space.

VISITORS to Germany may get an invitation to a ball. The ball in this case is a round house which is ideal for use as a small office or as a weekend house, hunting lodge, etc. The circular structure features elegant interior decoration and has an air conditioning unit. Its diameter is about four and one-half yards. The ball can be erected practically anywhere—even in a swamp or on the water, with an air ring. It requires no foundation and is easy to transport. Cost of the round house with door, window and floor is $1,400. Completely furnished, it's $2,150. The round house is currently being manufactured by a firm in West Germany and owners call living in it "A ball." •

WINE CELLAR is built-in under floor boards.

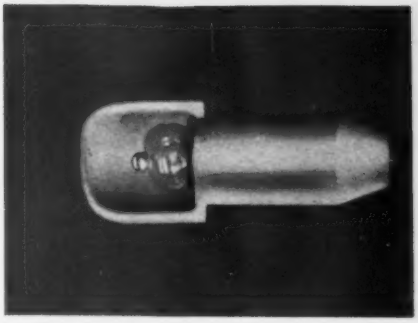
COZY kitchen boasts shelves, sink, electric stove and counter space.

PUTTING ball together is a snap. Sections fit together.

BRIGHT IDEA AWARD MECHANIX ILLUSTRATED

DASH LITE

HERE'S a handy light that fits any cigarette lighter socket, gives light for map reading, coin-counting, etc. Styled the Pathfinder All-Purpose Auxiliary Dash Lite, it twists in the socket to throw light any way; in most useful positions it creates no windshield reflection. Magnetized for handy storage on dash. Dash Lite sells for $1. Maker is Auto Lamp Mfg. Co., 2909 S. Indiana Ave., Chicago 16, Ill. •



SHIELDED LIGHT is simple, one-piece, switchless—plug it in and the light's on.

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

LIGHTER SOCKET takes Dash Lite; below, ample downward-directed light leaves outside visibility unimpaired.

SELF-LIGHTING CIGARETTE

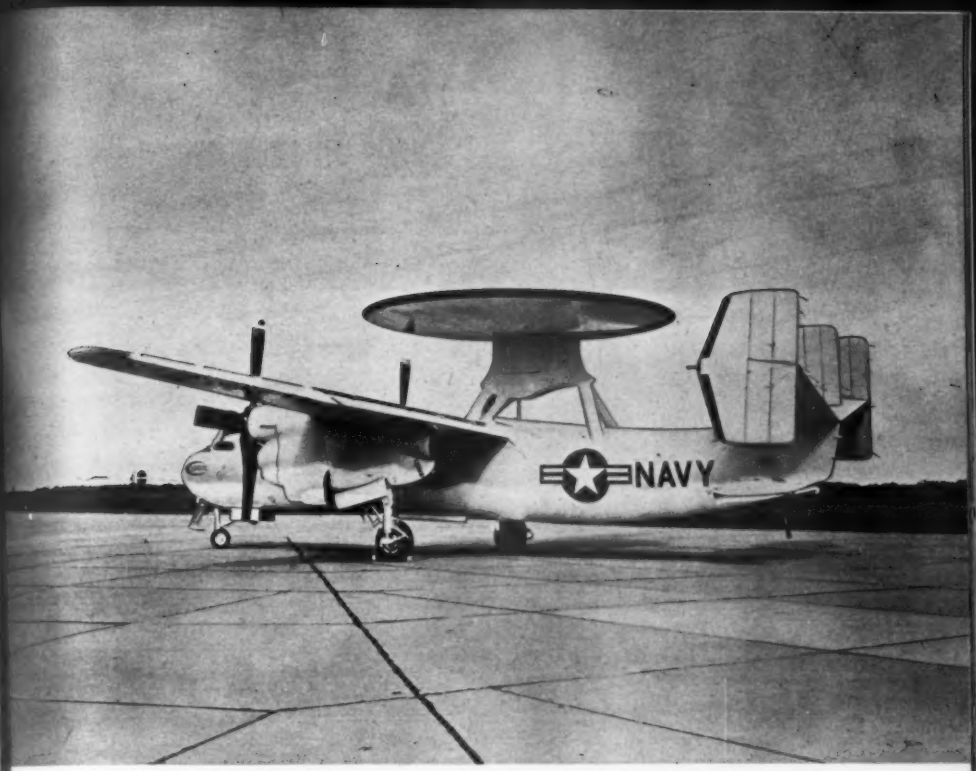
NO need for matches or lighter with the latest idea in cigarettes, invented by De Capatini of Milan. Each smoke has a small red dot (igniter) at one end which, when drawn across the special paper on the pack, lights the cigarette. The taste is not affected by the harmless chemicals comprising the inflammable ring. These cigarettes will cost about the same as ordinary ones. •

DUAL-CONTROL SCOOTER

STUDENT confidence is established when instructor is present as back-seat driver.

INSTRUCTOR'S handlebar doesn't turn but he has his own brake and clutch controls.

THIS tandem Lambretta is for teaching learners the fine art of scootering. The instructor sits on the rear seat and has access to duplicate clutch, brake and engine cut-out controls. These trainers sell for about $475. •



GRUMMAN HAWKEYE is new Navy early warning control plane. It carries crew of five, has a revolving rotodome on top for new style radar.

IT'S NEW!

NEW TAUNUS 17M features Italian look, unusual recessed headlights, drastically restyled grille and fender line. Chances are it will not be imported into the U.S.

CHURK is first successful cross-breed of domestic chicken and turkey, hatched as an unexpected result of Agriculture Dept. experiments in parthogenesis in poultry.

CONTINUED . . .

STUDEBAKER LARK offers new Skytop roof on sedan and hardtop models. The weatherproof 36x28-in. vinyl roof slides easily on chrome runners.

JET PROPELLED ice skater skims across a lake using Minnesota Engine Works 307 jet engine mounted in six-inch stovepipe.

ITALIAN inventor came up with these tire clamps designed to provide teeth for auto wheels for added traction on ice and mud.

SAM HARRIS trims his beard with electronic shears worked by signals bounced off moon.

DR. J. ERNEST AYRE displays his "gun" with small brush on tip that detects cancer in early stages by collecting cells from the throat, etc.

NEW SWISS battery-powered tape recorder weighs only 27 ounces, has one-finger control. For export.

ARMY'S new grenade launcher, XM79, is a 40mm., six-lb. weapon that can fire six-ounce grenade for a top range of 435 yds.

RESCUE BAZOOKA designed by Marshall Corrazza and Thomas Dulin fires folded life raft to swimmers. Tube is Alcoa aluminum.

Electronic
BATTLEFIELD SCOUTS

By Frank Tinsley

ANOTHER duty of the soldier is being taken over by the machine. The screen of far-flung reconnaissance patrols, upon which military commanders have traditionally relied for intelligence of enemy movements, is being replaced by electronic scouts. Radar detects and pinpoints hostile movements through smoke, fog and dark of night. Mobile TV eyes provide the distant commander with a continuously moving picture of the battle as it develops at various points. Infrared snooperscopes can even sense an enemy by vehicle or body heat!

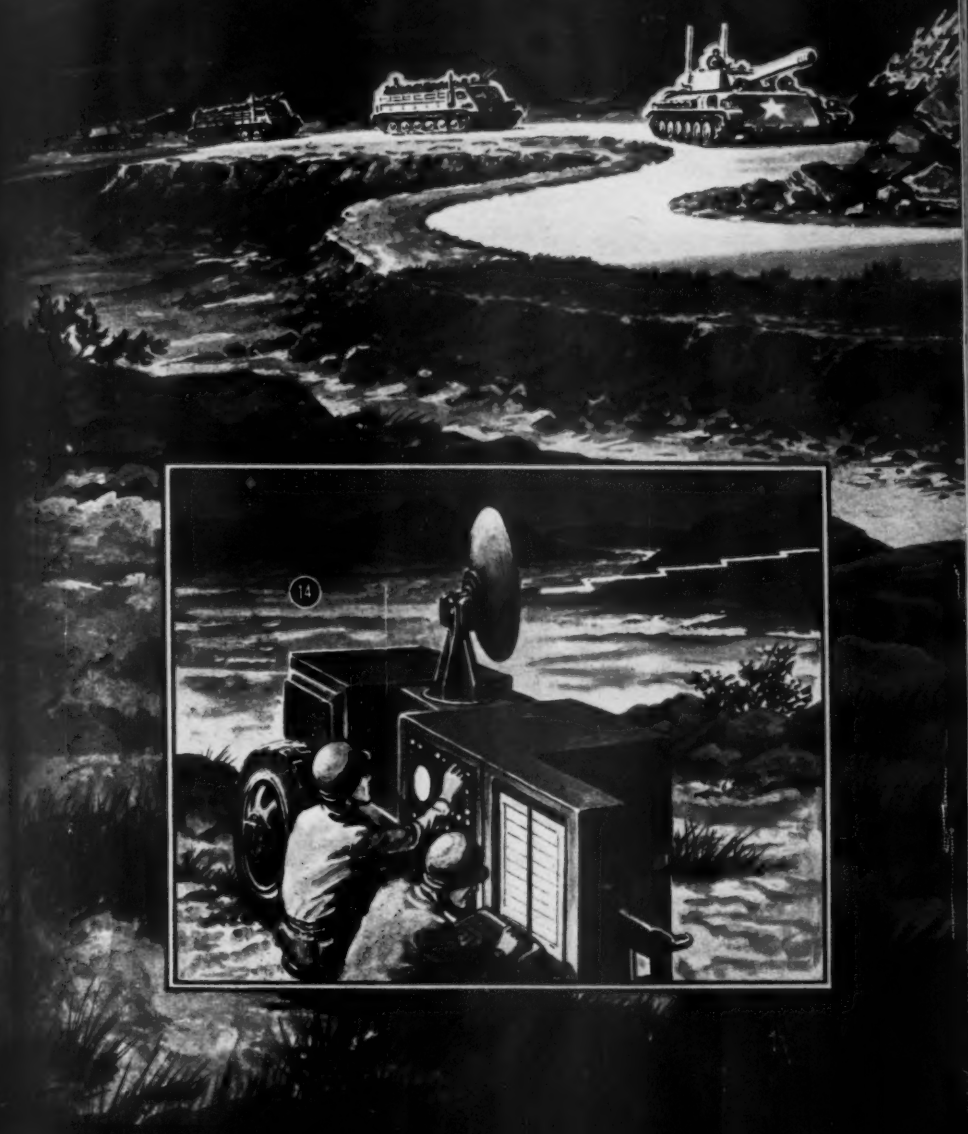
Soon, even the men now required to transport and operate these fantastic scouting gadgets will find their jobs gone. Already flying are robot planes in which the pilot has been replaced by remote control gear operated from a black box miles away. One of these, shown in

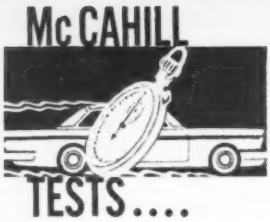
ROBOT surveillance drone in action over a battlefield. In background, transport and drone copter are landing Silent Scouts (see next pages).

NIGHT VIEW shows enemy column under surveillance by an MI Silent Scout. Numbers show: 1. TV transmission antenna. 2. Infrared beam projector. 3. Full-circle infrared scanning eyes. 4. TV pick-up and transmitter. 5. Optical range finder. 6. Infrared snooperscope. 7. Sten guns aimed by remote control. 8. Steering motor. 9. Steerable front Terra-tire. 10. Fuel cell powerpack, one on each side of Silent Scout. 11. Remote control propulsion gear. 12. Inertial gyro compass. 13. Rear Terra-tires. 14. (on facing page) Control station for Silent Scout. Observations from several Scouts are correlated here and moving target is pin-pointed on illuminated electronic map. On a repeater map at nearby missile battery, the target's speed, direction and range are automatically computed, waiting missiles are programmed and roar into action. Silent Scout can be made of off-the-shelf components and in a variety of sizes to perform special tasks.

the lead illustration, is the Fairchild AN/USD-5, now under test. Powered by turbojet engines, these unmanned drones can follow land contours at low levels to fool enemy radar, or climb to high altitudes for top deck missions. As they flash over the battlefield, their high speed makes them an almost impossible target for ground gunners. These aerial scouts can carry a variety of observation gear—radar, infrared or photographic cameras—and radio back their pictures in a continuous stream. Thus, if the machine is shot down at any point during its flight, all previously recorded information is safely in the hands of its operators—and no pilots are lost.

The tactics of tomorrow's wars will change [*Continued on page* 160]





CHEVY'S NEW

If you need an all-around sports wagon

By Tom McCahill

ETHEL MERMAN once made famous a song titled Anything You Can Do I Can Do Better—and it looks as if Chevrolet has just whipped up a ditty of similar braggadocio to chant at the Boys Of Wolfsburg who screw Volkswagens together. Chevy's new Greenbrier Sports Wagon appears to be a pretty close copy of the VW Kombi.

Now, as anyone living on this side of the Rain Forest knows, Volkswagen's little bus-like station wagons have gone over with Americans, for commercial as well as pleasure use, like free booze and Taxless Weeks. Nearly every U. S. city sports dozens of these little mechanical turtles being used as errand trucks.

ROOMY is the word: other Chevies have more length or beam—this has a 175-cubic-foot hold. Rear seats come out.

GREENBRIER

with loads of cargo room, this new family van may be it.

Young families with offspring fever have found them to be perfect for safaris to the seashore or the mountains. The typical American station wagon (now sedan-ized) offers very little real room for junkets that call for seating capacity for several people plus dogs, cats, beach umbrellas, water skis and Grandma's pet stuffed moosehead. VW's Kombi filled this gap perfectly until Chevrolet, which prides itself on having some type of transportation for everyone, came up with the Greenbrier for 1961.

I first had a chance to run a Greenbrier out in Michigan for a short hop last summer. I couldn't do a test then, as the only available vehicle was stripped as clean as a sandpapered eel. So I planned a real test of this little cricket for later on, which would have been very enlightening. I had about a ton of books and other stuff I wanted to move from Pennsylvania to Florida and I felt this would be ideal for really checking the Greenbrier's capacities over a long haul. Dates were set up and agreed upon two months in advance but then some-

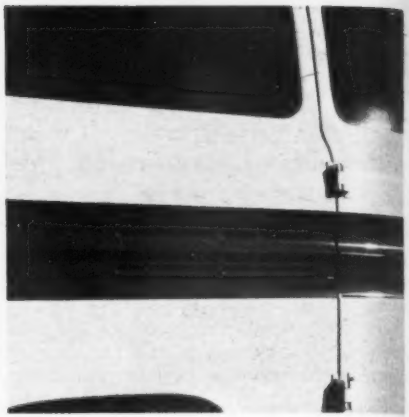
SHOEBOX styling like that of the VW Kombi spells inside space—a valued commodity.

HANDLING is easy but Tom recommends an alteration of the long-throw stick shift.

BIG WINDSHIELD has big electric wipers that clean a big two-thirds of its area.

HOMELY as the back end of a bus but all business. Tiny rear windows are a fault.

SEATBACKS have an adjustment for rake; seats are comfortable, ride is very good.



SLOTS scoop air into the air-cooled, rear-end engine—a six-cylinder Corvair mill.

body goofed, no Greenbrier was made available in time for the trip and I wound up shipping the test load South via commercial van.

When I arrived in Florida, I contacted M. B. Baumgartner, Sales Manager of Spence Chevrolet in Daytona Beach. He had two brand-new Greenbriers fresh off the truck, unserviced and unwashed. We borrowed one of them, had it serviced and washed and when she was ready to run, I loaded the dogs and Jim McMichael aboard and off we went. Before getting into the results of the test, let's go back and compare this rig's specifications with those of the VW Kombi.

In the first place, the Greenbrier is ten inches lower (68½") than the VW and a lot bigger, interior-wise. It has two removable, three-passenger rear seats which, when taken out, leave enough room for an Irish Passion Play, bricks and all. [*Continued on page* 154]

TEST CAR SPECS

MODEL TESTED: **1961 Greenbrier Sports Wagon.**

ENGINE: **6** cyls; **145** cubic ins; **80** brake hp; **120** ft-lbs max torque; **8.0** to **1** compression ratio. Bore **3.43** ins; stroke **2.60** ins. Fuel required: **Regular.** Standard axle ratio: **3.89:1.** Wheelbase **95** ins; length **179.7** ins; height **68.5** ins; width **70** ins; front tread **58** ins; rear tread **58** ins. Weight **3,015** lbs. Gas tank capacity **18.5** gals. Turning circle diameter **39.2** ft. Tire size **7.00X14.**

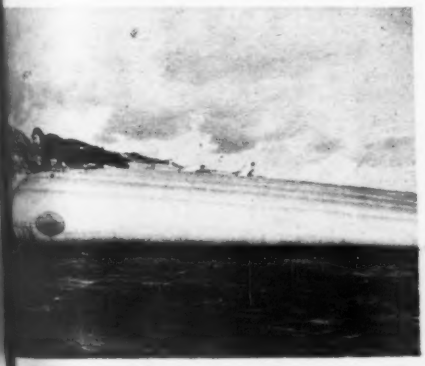
PRICE (without optionals): **$2,433.**

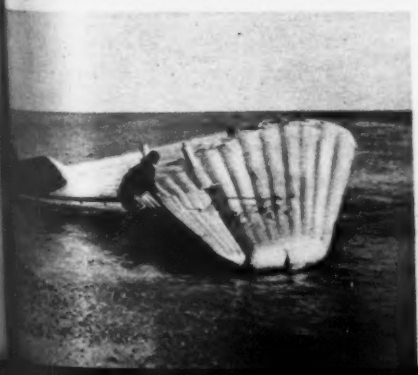
PERFORMANCE: **0-30** mph, **5.7** secs; **0-50** mph, **15.9** secs; **0-60** mph, **23.1** secs. Top speed **75** mph. All times recorded on corrected speedometer.

LABRADORS look politely at engine, prefer steak. They did enjoy the ride, though.

"BLOCK THAT KICK, ALF!"

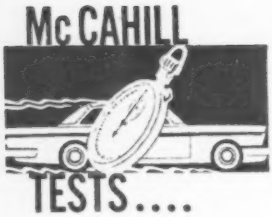
FOOTBALLERS—that's Limey for soccer players, who are the most popular athletes in Blighty—are being trained by a revolutionary new coaching method. Each player has a tiny radio receiver strapped under his arm and an earphone jammed into what is known locally as his ear'ole. The coach can thus, using his mike, speak softly into the ear of his pupils such advice as, "Try to kick it a little 'arder, darling," and "Come on, Bertie, get bloody mobile." Players shown here belong to Arsenal, a top pro soccer club. At present the radios are to be used only in practice but ultimately one foresees radio-controlled robot players, all steel and neoprene and transistors. •





INFLATABLE GLIDER

JULES VERNE might well have described the scenes shown here—but these are no movie stills. They are photos of experimental glider flights by Walter Neumark, an English research project manager. His craft is a delta-winged inflatable glider with a 35-foot span. Towed behind a motorboat it will glide at less than 20 mph. The glider was made by Neumark's firm which specializes in high-altitude pressure suits, diving gear and rubber dinghies. It takes 30 minutes to inflate the 3,000-cubic-foot envelope, using an old vacuum cleaner. The inventor's main object is to gain experience with slow-flying inflatable craft. Eventually he hopes to develop a glider that he can launch from a cliff by himself. •



the Lincoln Continental

"Make no mistake about it," says Tom, "these are truly quality automobiles."

By Tom McCahill

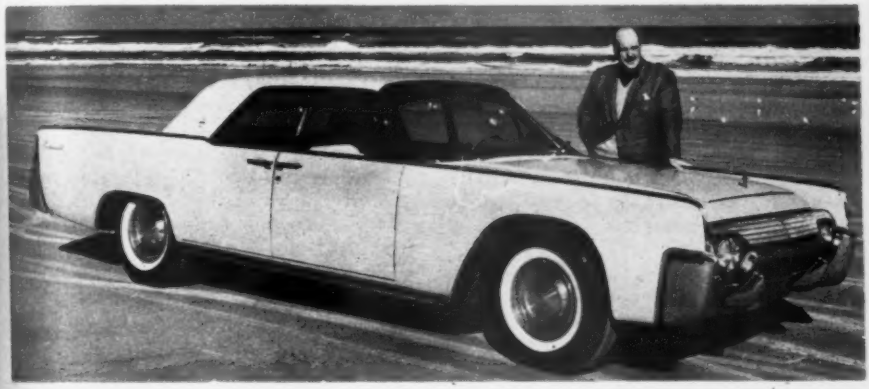
WHEN you get behind the wheel of the 1961 Lincoln Continental, there is no mistaking the fact that you're going First Class.

As Benedict O'Toole once said, "When a man's down, kick him in the head—when he's up, shake his hand."

UNCLE TOM rises like a phoenix from one of the chrome-edged fenders that flank the honeycomb-wedge grille of the Continental.

FANGED front bumper lends a bulldog visage to this 300-hp, 4,954-lb. luxury car.

REAR END has been simplified—gone the inverted vee with its sextette of taillights.



CONTINENTAL'S price includes radio, heater, defroster; also, power steering, power brakes and power door locks that flash a warning light until all doors close and lock.

In 1956 and '57 the Lincoln was in my opinion one of the finest-looking cars America has ever produced. Its lines were trim, its decorations modest and the overall appearance was "class," as they say in Shapiro's Shamrock Bar & Grill. In 1958, '59 and '60 the Lincoln's lines, to me, were strictly out of Stillman's Gym. Now some hot kid with a pencil and a box of clay has whipped up the 1961 Lincoln with the result that once again the looks will equal any car's in the nation and, in the opinion of some of my arty friends, will trim all others six ways from the post and twice on Sunday.

TEST CAR SPECS

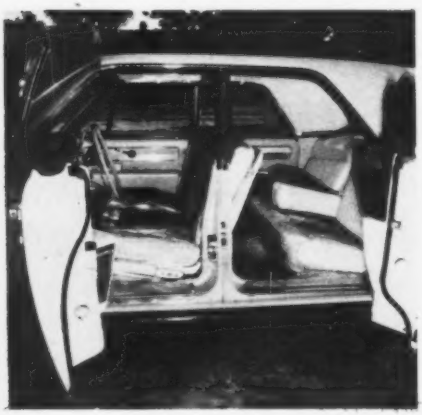
MODEL TESTED: **Lincoln Continental** four-door sedan.
ENGINE: **OHV V8** cyls; **430** cubic ins; **300** brake hp; **465** ft-lbs max torque; **10** to **1** compression ratio. Bore **4.30** ins; stroke **3.70** ins. Fuel required: Premium. Standard axle ratio: **2.89:1.** Wheelbase **123** ins; length **212.4** ins; height **53.5** ins; width **78.8** ins; front tread **62.1** ins; rear tread **61** ins. Weight **4,954** lbs. Gas tank capacity **24.5** gals. Turning circle diameter **39.5** ft. Tire size **9.00X14.**
PRICE (without optionals): **$8,067.**
PERFORMANCE: **0-30** mph, **3.8** secs; **0-50** mph, **8.3** secs; **0-60** mph, **11.2** secs; **40-60** mph, **6.1** secs. Top speed **110-plus** mph. All times recorded on corrected speedometer.

PRAISE for the new small steering wheel came after tests on the Daytona Speedway.

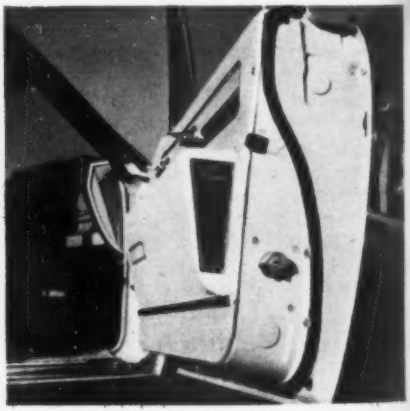
JIM McMICHAEL tries the trunk for size. The verdict: too small for long-trip loads.

The optional leather upholstery in my test car (the personal pride of Daytona Beach dealer Paul Cox) was pure creampuff. The accessories were "bully" (as T.R. used to say). My first small complaint about the ensemble concerns the instruments, which are on the smallish side and not too easy to read unless you're a needlepoint inspector. Aside from this, the car is as charming as attending a rich uncle's funeral (the one who remembered how to spell your name). Now let's start dissecting this barouche.

With a price tag of just about $6,000, the Continental is the match of any car in this range in the world. Quality of workmanship is as fine as I've seen in many a tide. And there are some other goodies which Lincoln has hidden in apparent boyish modesty. For example, it's easy to pay over $6,000 for many cats and dogs when the dealer gets through adding up the "optional accessories" which should have been standard equipment [*Continued on page* 156]



AMPLE LEGROOM for passenger comfort is assured by the roomy (and plush) interior.

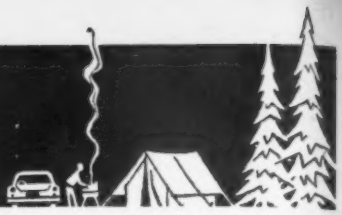


MASSIVE DOORS add to structural stability; note power lock mechanism at the edge.

mimi

WHILST looking at these photographs all MI Guys will wish
To spend a day with MIMI as she tries to catch a fish.
For MIMI's Easy Fishin' Chair is something for the books:
Chrome-plated steel and canvas seat, it's comfy as it looks.
Those rubber tips upon the legs are made for deck or beach.
Beneath the seat a tackle box is always within reach.
And hunters, too, will find the chair is useful in a blind—
The softest way to fish or shoot a lazy man can find.
It's made by Towser Products out in Creston, Iowa—
Cost: $14.95 and—well, that's all there is to say!

OUTDOORS
with
W. Scott Duncan



YOU CAN IMPROVE YOUR SHOOTING

WORKOUT: practicing what he preaches about practice, author displays good stance.

THERE is little excuse for not being a crack field shot; practice is the only secret. If you miss shot after shot at quail, grouse, pheasant, ducks, doves, geese or woodcock, it's because you haven't used the time between now and next fall to practice shooting at some good gun club.

There are 4,000 to 5,000 established gun clubs in the U. S. and Canada. Since there is a club for every income, it's a rare hunter who can't afford to belong to one, or at least to shoot a round a month as a guest. Dues run from $1 to over $100 a year; the estimated national average is around $5 a year. Besides the clubs and the countless groups operating without by-laws, there are commercial trap and skeet shooting fields in every state, where you can shoot for about $5 a round of 25 shots including cost of ammo any afternoon all year 'round. Clubs, as we shall see, charge members considerably less.

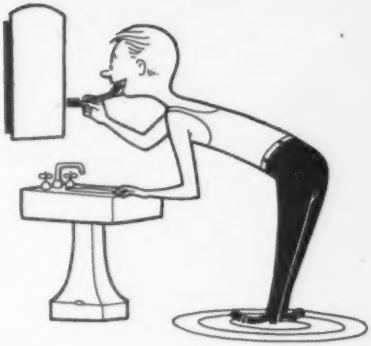
Club shooters today may shoot either trap or skeet. Both involve shooting at a flying clay pigeon. In trap shooting you shoot at single or double pigeons flying from a single "house." To vary the pigeons' angle of flight in relation to yourself, you move from one fixed shooter's position to another—there are five in all.

In skeet shooting you shoot at single or double pigeons flying from two separate houses, one high and one low. The fixed shooting stands are more numerous and give you a greater variety of shooting situations.

While trap shooting is good, I favor skeet for training and practice in all wing shots; outgoing, incoming, quartering and overhead. It became popular in the late 1920s. As more and more people shot skeet and developed into expert shots, gun barrels were shortened to the present 26-inch standard and choked to what is known as improved cylinder choke. Next, the double-barreled shotgun (still the preference of many hunters for upland shooting) all but disappeared from the skeet fields. The strictly skeet gun must be capable of knocking off two shots in rapid fire. To meet this demand single-barreled self-loaders came into popularity, and this type of gun is now used widely in the field.

It is highly advisable to practice skeet with the same gun you use in the field, unless you intend to take up skeet for its own sake with matches and tournaments in mind. Then you'll want a special skeet [*Continued on page* 162]

FOLDING STOOL attached to baby carriage so that Mother can take a break, get off her feet. Peter Zavota, Providence, R. I.

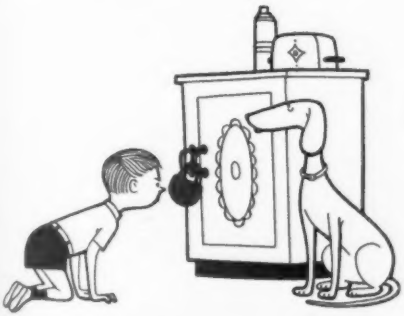


TOOTHBRUSH for home hygiene fiends with dental mirror on butt end—for viewing inside gumline. Mrs. E. Miller, Lansing, Mich.

ANTENNA SOCKET built into chimney top to make installation easier, eliminate guy wires, braces. Andy Vena, Philadelphia, Pa.

INVENTIONS WANTED!

Is there a gadget you think should be invented? If so, send its description on a postcard to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N. Y. Each one printed will be awarded $5. Entries not selected cannot be acknowledged or returned.



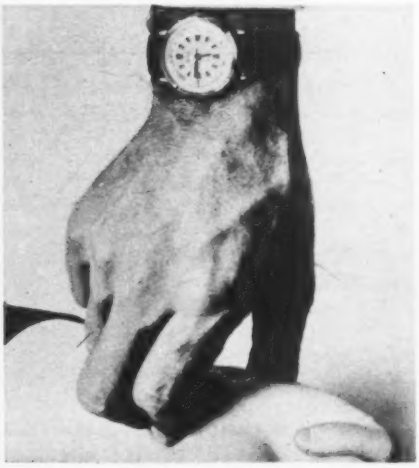
ANTI-CHILD locking device, with suction cups, for locking up cupboards without marring surface. Dorothy Celender, Irwin, Pa.

HIGH-LOW card table legs that can adjust to kids' tea parties or to Mom's canasta sessions. Louis Spinelli, Paterson, N. J.

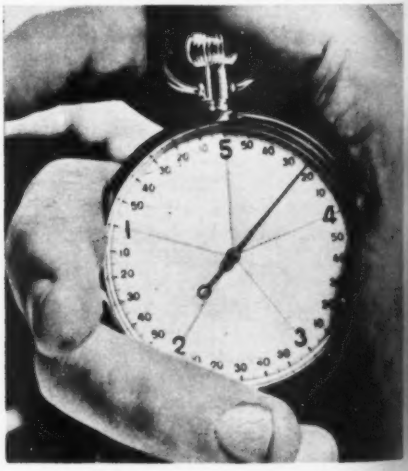
WORLD'S SMALLEST WATCH (next to the match head) is designed as one section of a jeweled bracelet. Diamonds make up other sections. Cost? Oh, about a modest $20,000 or so.

THESE WATCHES DO EVERYTHING

You can do more with a Swiss chronometer than just tell time! Here are the latest models made for special tasks.



PULSECOUNTING watch for doctors gives a direct reading from the calibrated dial.

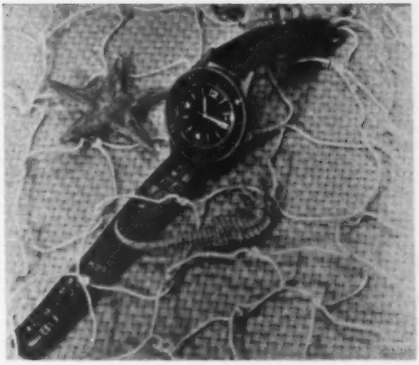


YACHT TIMER, good for any length race, has a wedge-shaped color for each minute.

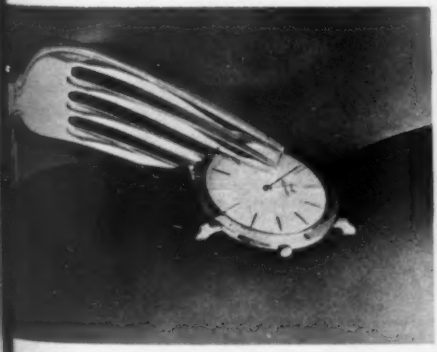
WRIST NAVIGATOR for pilots gives speed, fuel use, rate of climb, time of arrival.

PARKING METER watch is latest from Switzerland. Alarm sounds when your time is up.

PIANISTS should go for this pocket metronome which can beat out any tempo you set.



SKIN-DIVER'S watch is waterproof, alerts diver when his compressed air runs low.



WORLD'S THINNEST watch is .0916 inch thick, is a self-winding job of 18k gold.

BRAILLE wristwatch for the blind has raised dots at the numerals and a flip-up crystal.

SHRUNKEN HEADS=GROWING PROFITS

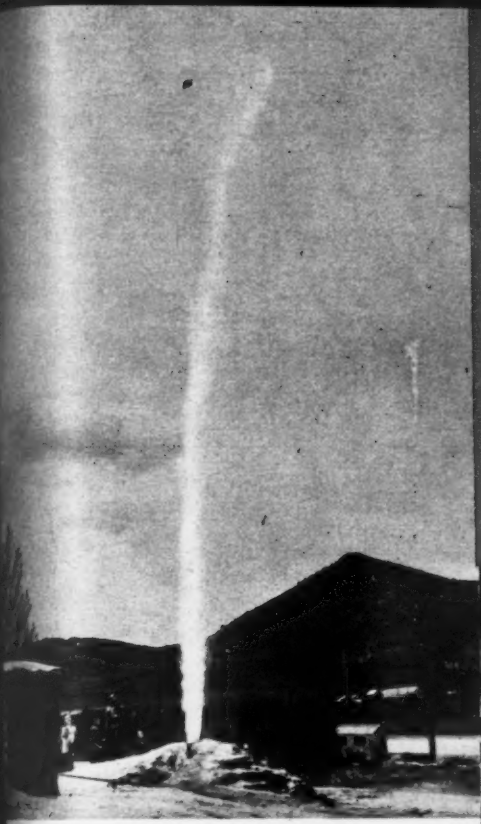
MONEY MAKING IDEA

SAM RIFKIN, one of Glendale, California's more imaginative citizens, is a furrier by trade and a head shrinker for fun and profit. No, Dad, not human heads; Sam shrinks mink heads.

Shrunken mink heads may be as large as small oranges or as small as large olives. Sam fashions them into more than 30 novelty items including bookends, key chains, bottle openers, tie clips, bolo ties, cufflinks, earrings, brooches and rings. The average retail price of these unique products is $3. [*Continued on page* 160]

MINK-HEAD SHRINKER Sam Rifkin is shown with some of his wares. So many orders requested Shrink-Your-Own-Head Kits that Sam now manufactures one (above). Each kit includes two eyes, a carrying cord, one plastic skull and a suede, mink-trimmed head that is stretched over the skull to form the face of a "Witch Doll" or "Medicine Man." Rifkin says the usual reaction to his Mink Maskots is first revulsion, then affection as soon as their furry heads are stroked.

DO-IT-YOURSELF GEYSER



124 FEET UP goes Young Faithful. Man-made wonder is hot, loaded with minerals.

SODA SPRINGS, Idaho, has its own geyser—a very handy one that can be turned on or off to suit the visitor. It can also be turned down, so that youngsters can stick their fingers into the pleasantly hot (84°) water.

Many years ago the town was drilling a hole to reach one of the hot springs in the region. The idea was to get water for a community swimming pool. At 320 feet the drillers struck "soda water"—a big deposit of carbon dioxide and mineral-strong water. For 45 days—five days longer than in Biblical flood—the torrent raged. Then they managed to cap it.

Now the same geyser is kept under lock and key by Bud Sizemore, who is also the caretaker of the local airport, city hall and library. He's a cop, too. Bud will turn on the geyser any time the wind is right. Wind can drench a crowd of gapers. •

VALVE for turning on, shutting off geyser is kept under lock and key. Below, visitors to the tourist attraction take a good, close look at base.

MEET

Dick Petty

Star of stock car racing at 23, he made $35,380 in 1960.

By Jim McMichael

RICHARD PETTY is to stock car racing what Mickey Mantle is to baseball. Given their "druthers," most boys over 14 south of Pennsylvania and east of the Mississippi would prefer to follow in Petty's treads than in Mantle's

HURTLING around the Daytona International Speedway at speeds up to 150 mph. Richard Petty (in car 43) moves up on the outside to pass Tom Pistone.

spikes. Like Mantle, Richard is young (23), big (6'4"), good-looking and eminently successful at his chosen craft. During the 1960 NASCAR Grand National racing season just ended, Petty carted home $35,380 in prize money, finishing in second place in national point standings for Leading Driver. In 40 starts, he *finished* in the top ten 30 times, in the top five 16 times, and won three major races—all this in only his second full racing season!

Dick is the son of Lee Petty, dean of the stock car wranglers. It is a genuine thrill to watch father and son jockeying for position with each other on the track at better than 145 mph—and the fans eat it up. Actually, they run as a team. To illustrate just how effective a combination they make, consider the fact that between them they won 20 per cent of all the Grand National races in 1960 and that one or the other or both of them finished in the top five 37 times in 44 races!

Add to this the fact that a third Petty—Maurice, Richard's 21-year-old brother—has recently entered the stock car racing field on his own and it's easy to foresee a *triple*-threat combination that won't be at all petty. (However, rumor hath it that Daddy Lee is now considering quitting driving and devoting his time to managing his two sons.)

Unlike the majority of drivers—who would race for nothing if they had to—Lee and Dick Petty make racing their business. As Richard put it to me last winter at the Daytona International Speedway, "If I could make more money running a supermarket, I'd run a supermarket." We were watching the cars trying to qualify for the Daytona 500—fastest stock car race in the world. Dick had just qualified his 1960 Plymouth an hour before.

"How come you are a race driver?" I asked him. "Why, because it's the most natural thing for me to be doing," he answered. "I never wanted to be anything else since I can remember. I've been slipping in and out of pits since I was 12. Racing is our life."

Next I asked him what the secret was behind the success of the Petty team. "It's nothing but work," he said. "Sure, Daddy's a great driver, alright, but what's kept him on top all these years is just one thing—he doesn't leave anything to chance."

"Equipment is 75 per cent of any driver's success," he continued. "Our two Plymouths down here have over 3,000 man hours of work in them and every hour was put in by us. We made money last year but we spent over $60,000 doing it." He pointed toward the garage area where dozens of race cars were being worked on. "See those boys over there working their tails off? Fifty per cent of them sit up nights thinking how great it would be to break even, because there's so much money they've got to beat and [*Continued on page* 170]

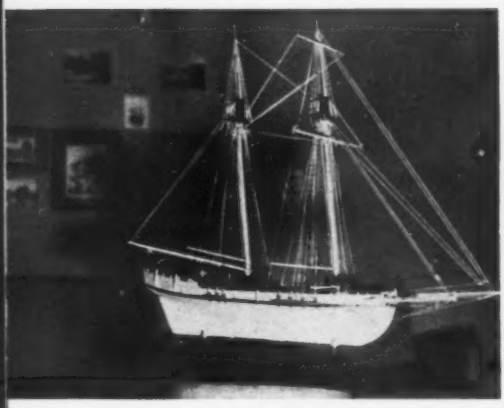
LIKE FATHER, LIKE SON—Lee and Dick Petty have raced together for two seasons.

THUMPER I is the '60 stock Plymouth that helps keep young Petty running in money.

JET PILOT

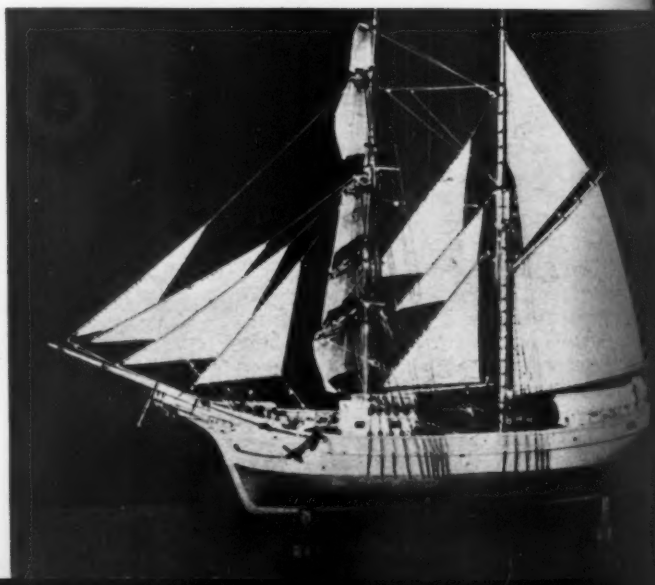
BUILDS MODEL SHIPS

CAPTAIN John Moroney is a jet pilot in the USAF, currently stationed at Vance AFB, Enid, Okla. A model maker for years, he began making sailing ships seven years ago. On a tour of duty in England he made friends with many English ship modelers, acquired a fine set of miniature tools including a tiny table saw that an English engineer made for him. It was through the English Guild Of Model Shipwrights that Moroney's models came to the attention of the Smithsonian, which has commissioned him to build certain models. •



SMITHSONIAN Institution commissioned Moroney to build this model of a 1780 ship.

TINY SAW that slices wood to six one-thousandths of an inch is Moroney's pride.



BRIGANTINE Leon, 18th-century Norwegian, was most difficult model ship that Moroney ever built. It took him about 18 months.

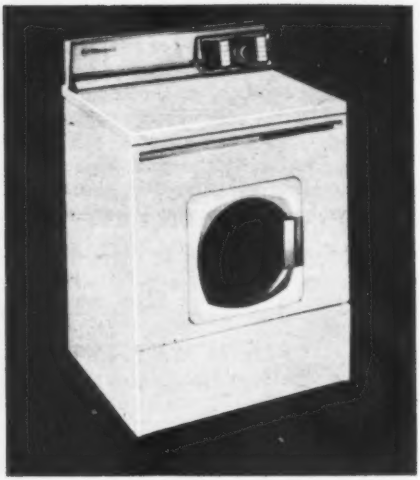
ADJUSTABLE SWIMMING POOL

THE pool floor shown here, of colored, non-skid aluminum, is electrically powered and remote-controlled. With it the pool depth can be adjusted to any size of splasher, or you use it "up and locked" as a patio, etc. The maker, Safety Pool Lift, Hialeah, Fla., hopes law-makers will let self-guarding pool, safer than fenced pools, go attractively unfenced. •

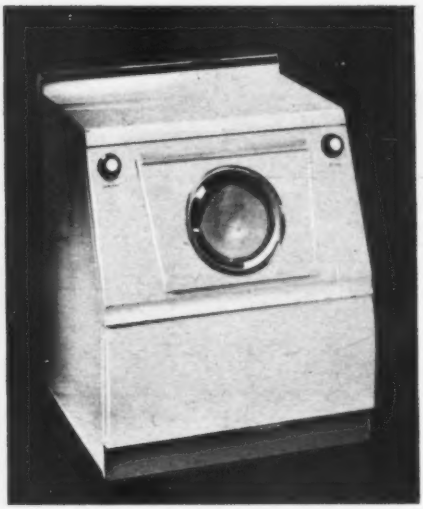
TOASTING one side while she dunks the other in an inch or two of cool water, young lady of the house watches TV and thinks about important issues. Right, she goes down bravely on the sinking deck. Hoist units may be seen at end of pool, facing each other. The planking is aluminum.

PATIO use of pool is quite safe; when the floor is locked it will hold a small truck.

NO BUTS from the kids about getting out of the pool—hit the button and they're out.



WHIRLPOOL washer-dryer combination has fabric guide from which user selects the cycle which matches wash load, then pushes button. Machine does the rest. $499.95.



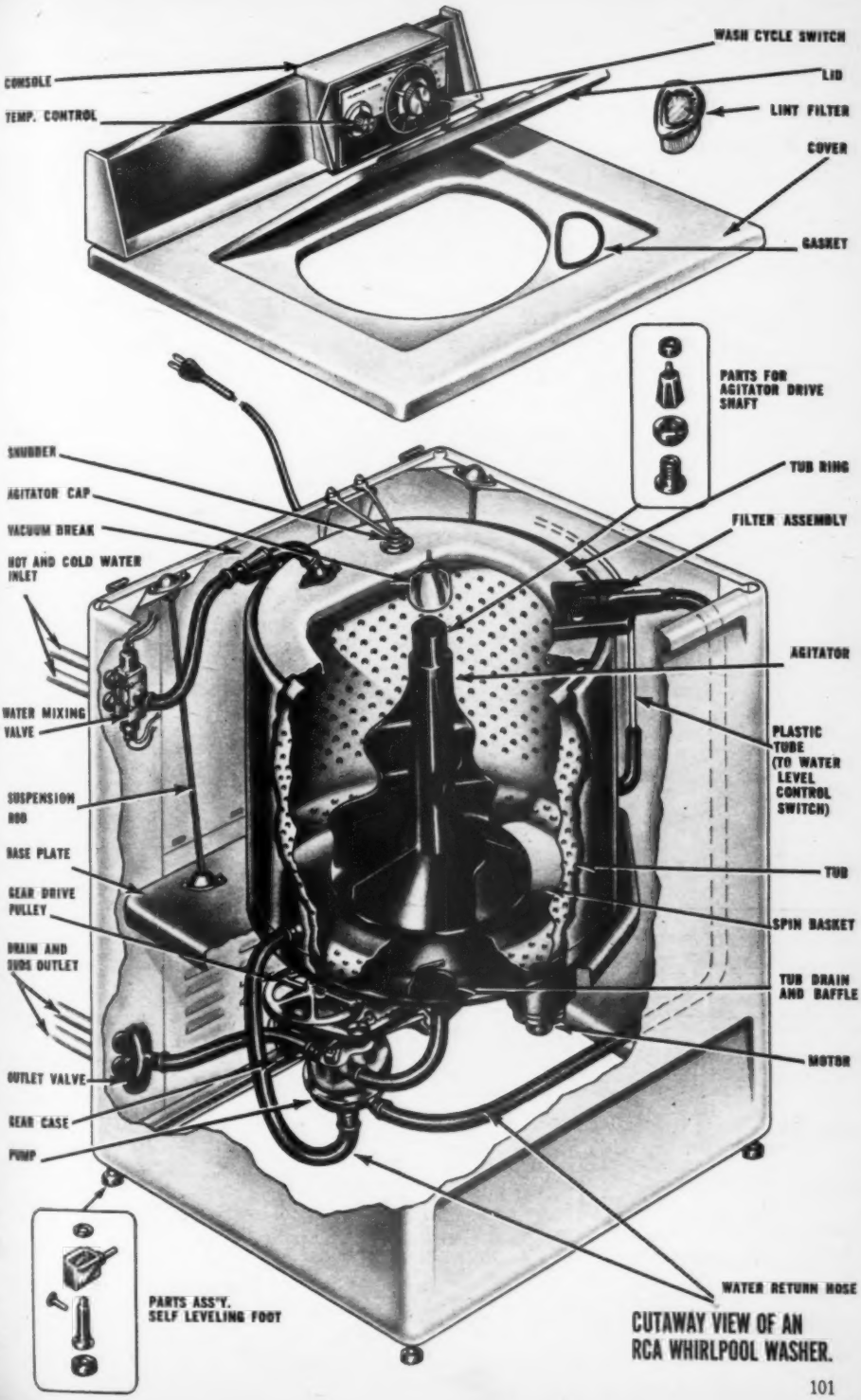
MONTGOMERY WARD Signature models include washer-dryer combination with capacity of 11 lbs. The time and temperature settings are controlled by dials. $308.76.

WHAT YOU SHOULD KNOW ABOUT WASHING MACHINES

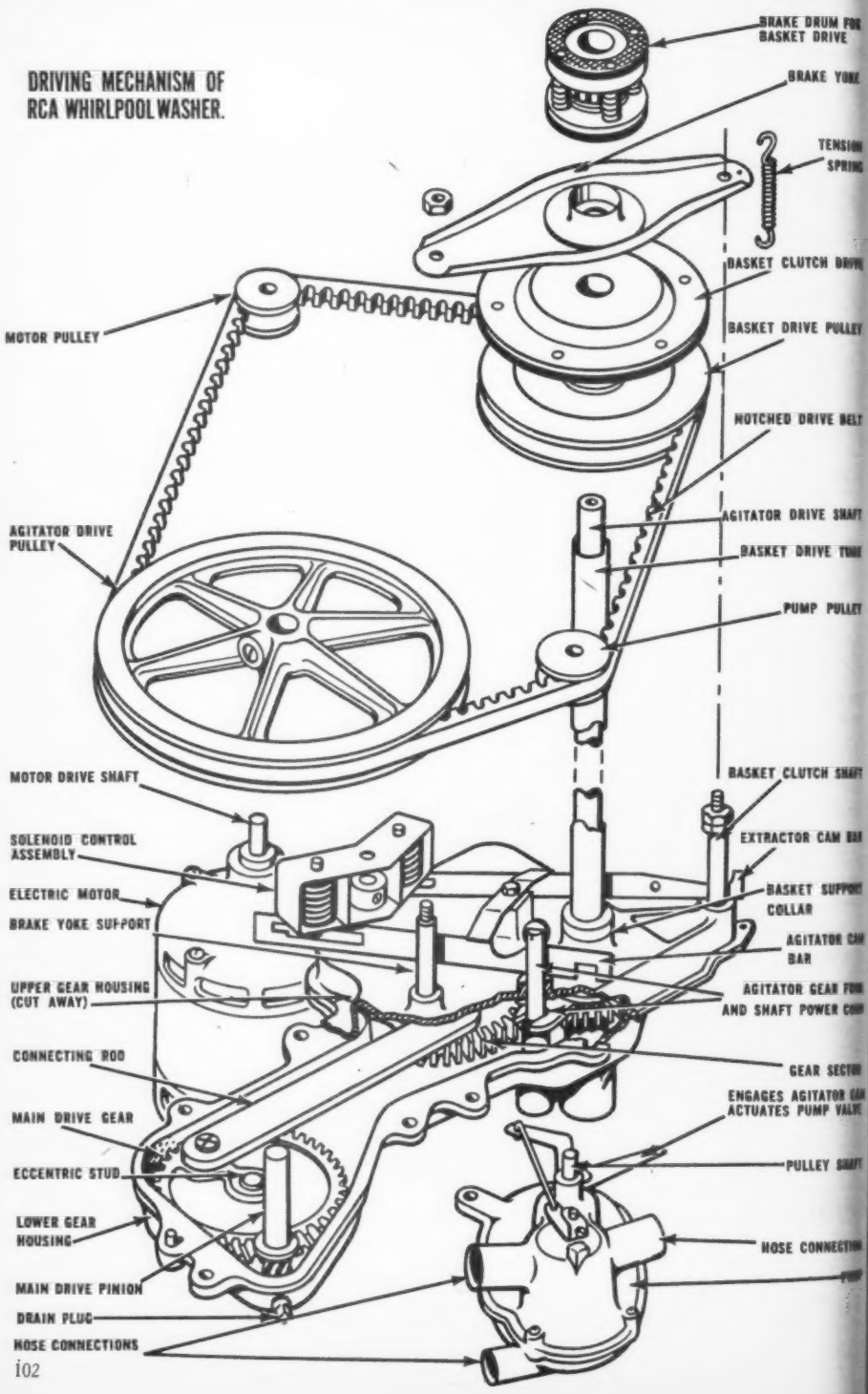
By Al Bernsohn

AUTOMATIC washing machines have come a long way since 1937, when the first models had to be bolted down to a concrete footing because of tremendous vibration. In fact, "automatic" was hardly the word for those early models in contrast to today's free-standing, smooth-running, push-button wonders.

Today, all a housewife has to do is load the machine, set the controls and walk away. While she tends to other things, the washer will fill with the right amount of water at the proper temperature, wash the clothes, rinse them, spin them damp dry and shut off automatically. Added refinements include lint filters, sediment ejectors and automatic devices for putting in detergent, bleach



CUTAWAY VIEW OF AN RCA WHIRLPOOL WASHER.


DRIVING MECHANISM OF
RCA WHIRLPOOL WASHER.
BRAKE DRUM FOR BASKET DRIVE
BRAKE YOKE
TENSION SPRING
BASKET CLUTCH DRIVE
BASKET DRIVE PULLEY
MOTOR PULLEY
NOTCHED DRIVE BELT
AGITATOR DRIVE SHAFT
AGITATOR DRIVE PULLEY
BASKET DRIVE TUBE
PUMP PULLEY
MOTOR DRIVE SHAFT
BASKET CLUTCH SHAFT
SOLENOID CONTROL ASSEMBLY
EXTRACTOR CAM BAR
ELECTRIC MOTOR
BASKET SUPPORT COLLAR
BRAKE YOKE SUPPORT
AGITATOR CAM BAR
UPPER GEAR HOUSING (CUT AWAY)
AGITATOR GEAR FORK AND SHAFT POWER CAM
CONNECTING ROD
GEAR SECTOR
ENGAGES AGITATOR GEAR ACTUATES PUMP VALVE
MAIN DRIVE GEAR
PULLEY SHAFT
ECCENTRIC STUD
LOWER GEAR HOUSING
HOSE CONNECTION
MAIN DRIVE PINION
PUMP
DRAIN PLUG
HOSE CONNECTIONS

UM FOR
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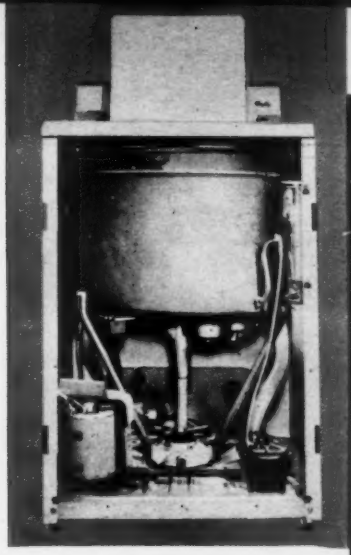
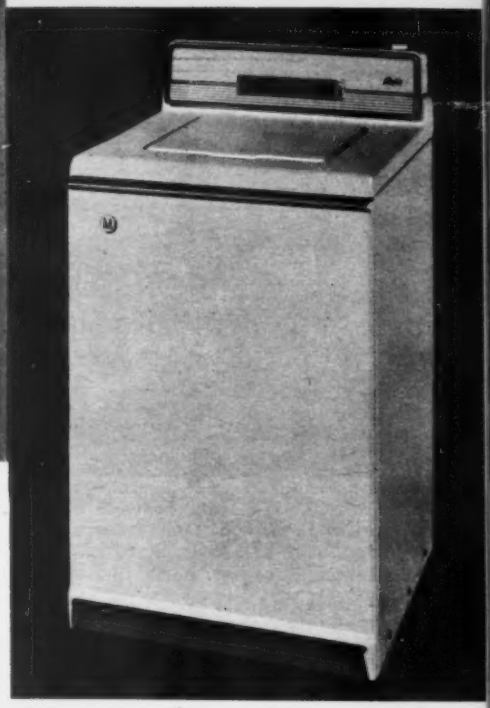
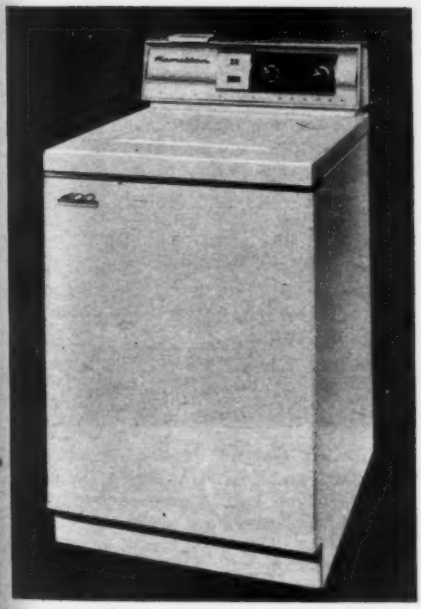




MAYTAG interior is exposed by removal of front, above. Model 160, right, has a push-button for each of 8 cycles, features automatic soak and bleach injection, lint and sediment removal, suds saver, is $419.95.



HAMILTON model 4T12 is equipped with a rotary timer for two wash, rinse and spin cycles, has two-speed agitation and spin, bleach injection, shower rinses. $369.95.

and water or fabric softeners. And any of the multitude of modern fabrics can be given correct treatment by varying the initial setting for a wash cycle.

How to select the right washer might easily be determined by noting the added features in the higher-priced models and weighing their value to you. While manufacturers' suggested list prices may be somewhat higher, consumers living in most metropolitan markets can usually secure top models between $265 and $300. These will offer the widest selections of temperature control, speeds, cycles and automatic laundry aid dispensers. They'll also look better, have more porcelain, lights, timers and features for saving water, heat and detergent.

The widest range of models will be in the middle-price bracket from $225 to $250. They have decidedly less trim and convenience features than the top models. The lower-priced automatics fall roughly between $150 and $200. About a third of the washers made today are these lower-priced automatics and the wringer and semi-automatics

SEARS, ROEBUCK Lady Kenmore features 14 wash and rinse cycles with pre-wash soak included, has automatic liquid detergent and bleach dispenser, holds 10 lbs. $319.

NORGE rotary timer allows choice of two fully automatic washing cycles, has five-temperature water control, two-speed wash and spin, capacity of 10 lbs., is $249.95.

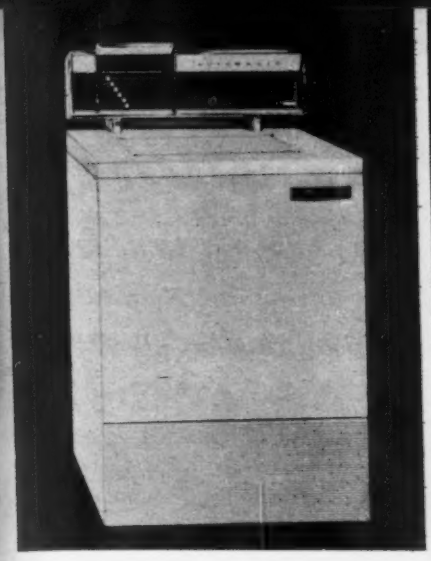
KELVINATOR models have automatic rinse additive dispenser. Additives which clean and soften clothes are measured and poured in at start, are later sprayed into rinse.

FRIGIDAIRE Custom Imperial finishes the job after two dials are set: a 6-position fabric selector and a degree-of-soil dial. Soak and dispensers are automatic. $399.50.

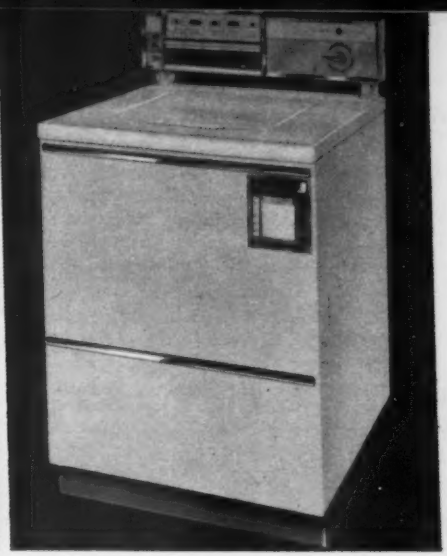
which will generally sell for even less.

Basically, a washer consists of a laundry basket in a container which holds the water, detergent and other laundry aids. It is designed to turn the laundry over frequently, subjecting it to impact, flexing and abrasion so that the fibers are exposed to the washing solution which releases dirt and grease.

There are two general types of automatic washer: those with a vertical axis and those with a horizontal axis.

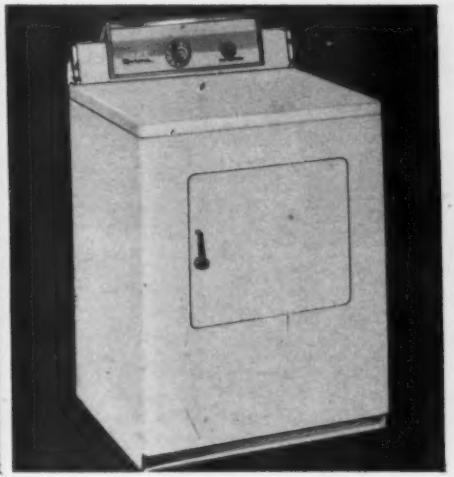


PHILCO Automagic controls can be set to carry out any of six wash cycles with two speeds. It features automatic soak, water saver and a filter-dispenser, is $369.95.



GENERAL ELECTRIC Five-Cycle Filter-Flo has a lint filter which acts as a detergent dispenser and automatic bleach and rinse conditioner dispensers. The cost is $389.95.

HOTPOINT Touch Command allows any type of wash load to be put through the proper cycle with detergent, bleach and softener automatically dispensed. $369.95.



EASY Riviera model's control dial can be set for any of three cycles. Unit has three wash and two rinse temperature settings, fast and slow spin speed. Price is $259.45.

In the vertical axis type, the agitator either rotates, undulates, moves up and down or back and forth in a 180° arc. Any one of the actions is designed to produce the necessary impact, flexing and abrasion with the clothes being driven outward and upward and then tumbling back toward the agitator blades in the center.

In the horizontal axis type, the basket rotates at a speed which is slow enough to allow the [*Continued on page* 148]

FIZZ BOAT

It's no headache to build, it's painless to operate. Naturally, the rascal runs on Alka-Seltzer!

TO "FUEL ENGINE" a broken Alka-Seltzer tablet is dropped in squeeze-bottle half full of water.

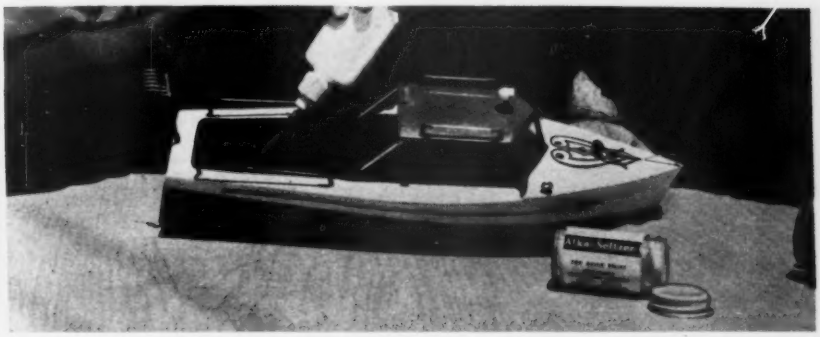
PINCHING the exhaust tube by means of a plastic sleeve and eye screw controls speed of boat.

By Paul Del Gatto

WHILE this stylish little cabin cruiser resembles many life-size boats that populate American waterways, a second look tells us that something is noticeably absent: namely, the screw propeller. This being the case, what makes the darn thing go? We conclude that the boat must be powered by some kind of reactive force, yet a glance at the boat's interior reveals no jet or rocket engine. What we do see is a plastic container with a piece of neoprene tubing running out under the transom of the boat. Could this be our engine? . . . this 25¢ atomizer squeeze-spray bottle with its neoprene "exhaust pipe?" The answer is yes!

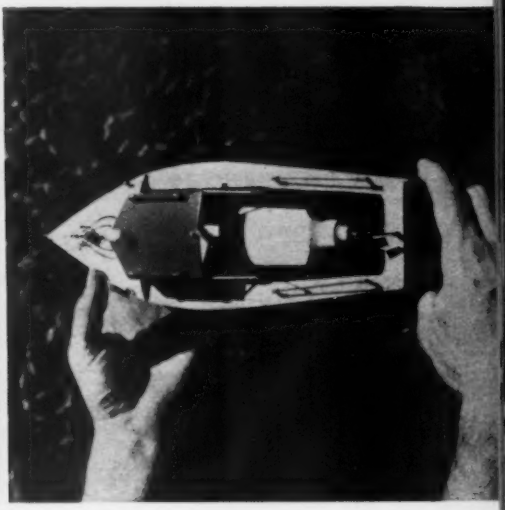
Here is perhaps the simplest, most economical and safest type of engine ever developed for model boats. Its basic fuel ingredient is available at any drugstore. This is Fizrin (a powder) or Alka-Seltzer (a tablet), either of which when mixed with water cause a chemical reaction to take place which produces a harmless gas that escapes as a jet stream and propels the boat. It's as simple as that!

Constructing the boat. Begin by cutting the bulkheads to shape. Then cut the pieces for the engine compartment and cement them between bulkheads B-2 and B-3. Fashion the keel from hard ⅛-inch sheet balsa and cement it into the notches on B-2 and B-3. When the cement has dried, cut the sides of the hull to shape and cement them to bulkheads B-2 and B-3. Then cement bulkhead B-1 and [*Continued on page* 153]



TO START BOAT: (1) Mix Fizrin or Alka-Seltzer with water in the squeeze-bottle engine; (2) screw on cap; (3) quickly set engine in the boat so that exhaust tube leads out through hole under transom; (4) place boat in the water and let 'er rip.

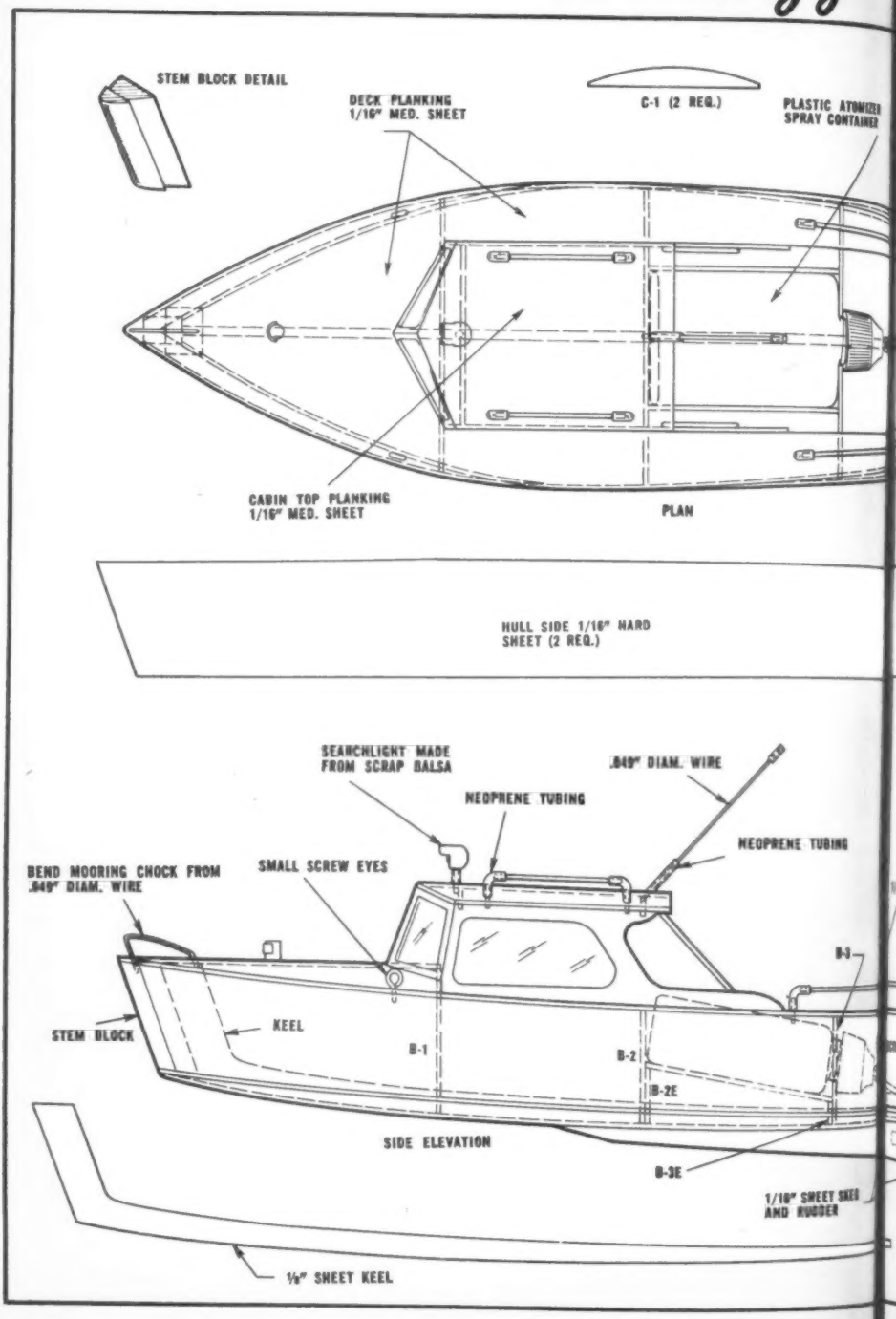
NOTE length and angle of exhaust nozzle. Bent rudder keeps boat on circular course.



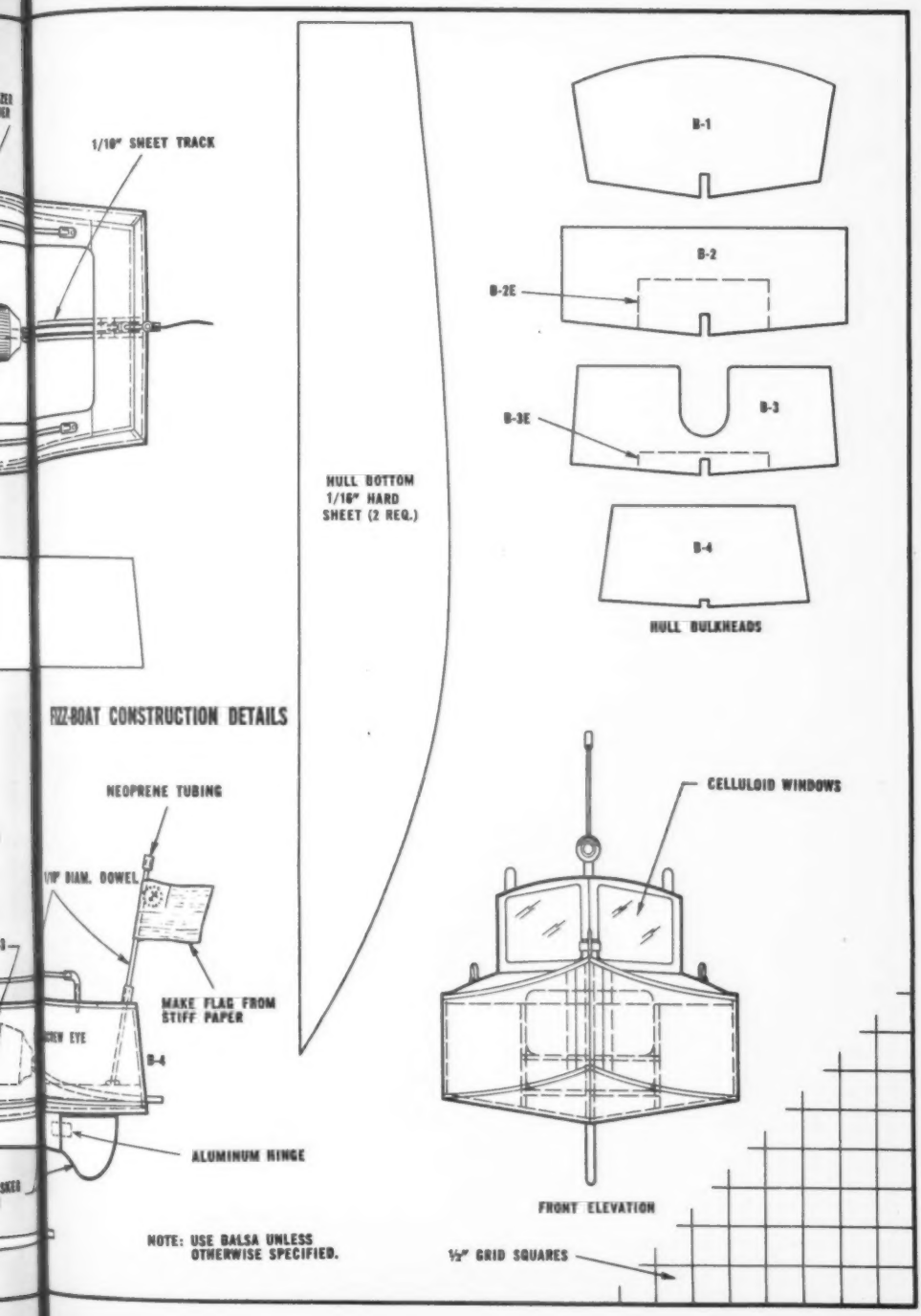
DETAILS add realism to the model: note searchlight, antenna, mooring chock, flag.

Turn page for plans

Fizz


STEM BLOCK DETAIL
DECK PLANKING
1/16" MED. SHEET
C-1 (2 REQ.)
PLASTIC ATOMIZER
SPRAY CONTAINER
CABIN TOP PLANKING
1/16" MED. SHEET
PLAN
HULL SIDE 1/16" HARD
SHEET (2 REQ.)
SEARCHLIGHT MADE
FROM SCRAP BALSA
.040" DIAM. WIRE
NEOPRENE TUBING
NEOPRENE TUBING
BEND MOORING CHOCK FROM
.040" DIAM. WIRE
SMALL SCREW EYES
B-3
STEM BLOCK
KEEL
B-1
B-2
B-2E
SIDE ELEVATION
B-3E
1/16" SHEET SKEG
AND RUDDER
1/8" SHEET KEEL

Boat


1/16" SHEET TRACK
HULL BOTTOM
1/16" HARD
SHEET (2 REQ.)
B-1
B-2
B-2E
B-3
B-3E
B-4
HULL BULKHEADS
FIZZ-BOAT CONSTRUCTION DETAILS
NEOPRENE TUBING
1/16" DIAM. DOWEL
MAKE FLAG FROM
STIFF PAPER
B-4
ALUMINUM HINGE
CELLULOID WINDOWS
FRONT ELEVATION
NOTE: USE BALSA UNLESS
OTHERWISE SPECIFIED.
½" GRID SQUARES

SHELVES AND SHELVING

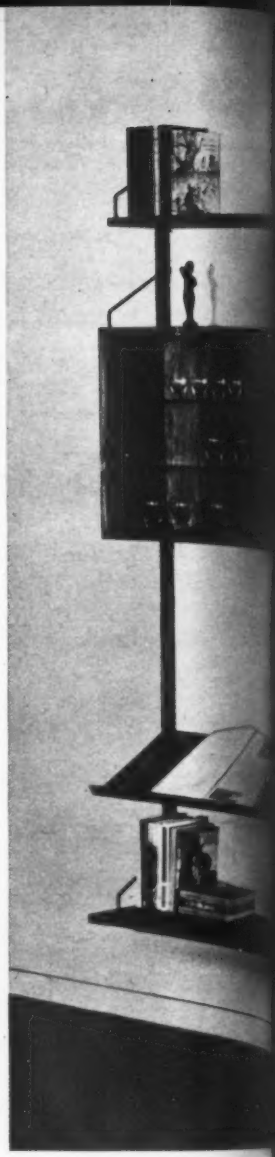
New ideas have put the old boards on a new plane and furniture is now the word for shelving in the modern home.

By Ralph Treves

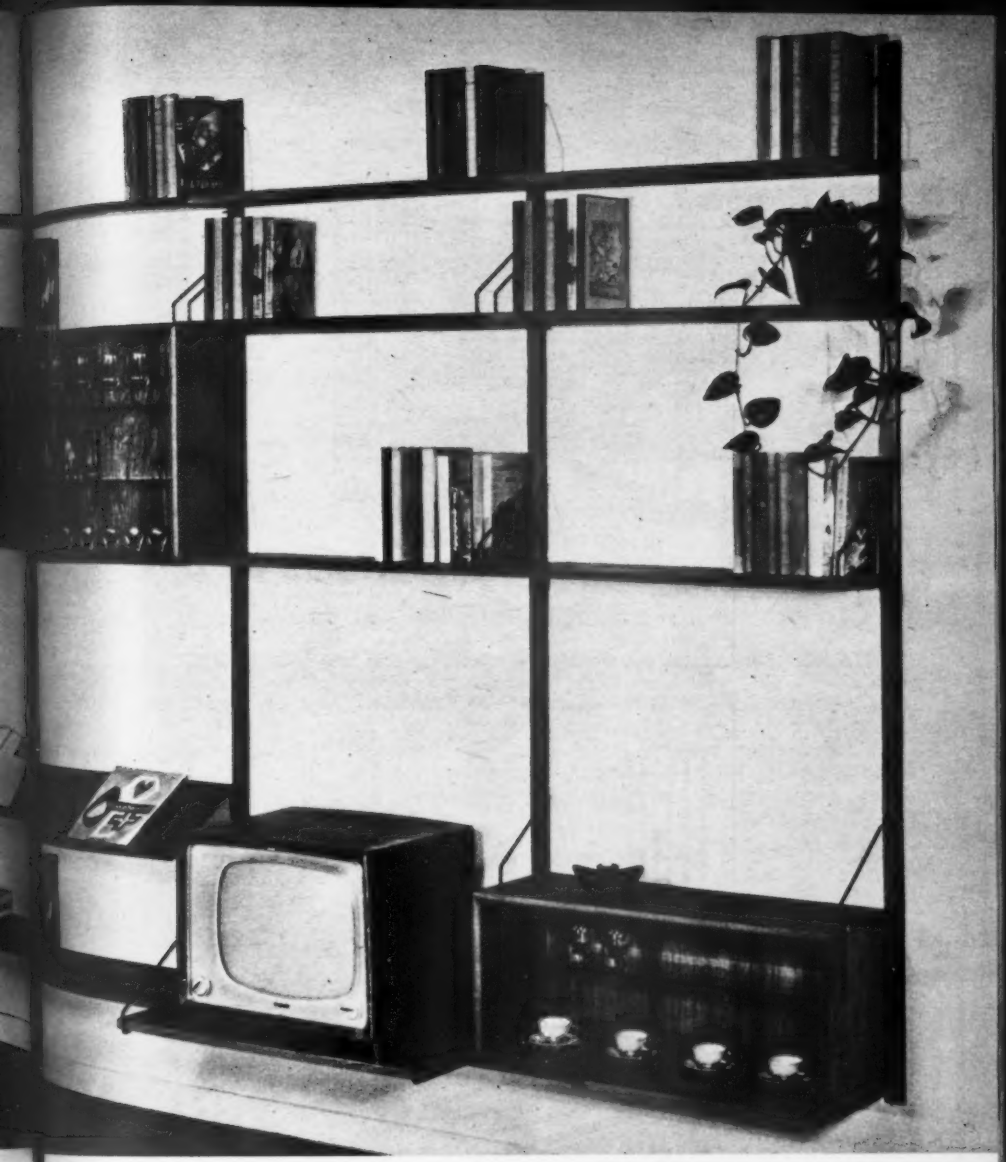
GONE are the days when shelves were just tiers of any old wood, hidden as much as possible by rows of books or covered completely by cupboard doors. Now they're out in the open, taking a proud place as part of the furniture. In fact, well-designed shelves have become the focal point of the modern family's widespread interests: they hold the Hi-Fi and TV sets, tilted supports for large dictionaries and other reference works, writing surfaces, the fixin's for a welcoming drink, storage cabinets, plants, trophies and decorative bric-a-brac. You'll find it well worth your while to put extra effort and expense into planning shelf units for your home.

An interesting facet of modern shelf design is that the shelves, while deeper and longer than ever before, do not appear heavy or massive. On the contrary, you may see an entire wall covered with shelves and yet there is a lightness and uncluttered airiness about the whole thing. The reason stems in large part from the elimination of side uprights as supports. Instead, slender standards anchored to the wall behind the shelves and graceful brackets in wood, chrome or polished brass carry the load with no apparent strain.

Good results with shelving require attention to a few basic points. Most important is to assure adequate support because you don't want the shelves to sag under the weight—or give up the ghost and drop everything! The wall-mounted standards should be no more than 36 inches apart and, if the shelves will carry heavy objects, they should be no more than 24 inches apart. If possible, one of the standards should be placed so that it is over a wall stud; then the others can be placed so that two of every three are anchored to studs while only the one between depends on a wall anchor. This, of course, is assuming that the studs are regularly



MOVABILITY of wall-hung shelves and cabinets permits countless arrangements. Teak or walnut units are made by Royal Systems, 1130 Third Avenue, N. Y. 21.



spaced at standard 16-inch intervals.

Before anchoring the standards, find the wall thickness. Drill a small hole, insert a wire bent at a right angle and pull it up tight. Then hold the projecting end close against the wall and withdraw the wire. The distance from your fingers to the bend will be the wall thickness. If the wall is quite thin and hollow behind, use Molly or Wallgrip anchors that spread out and tighten against the wall at the back. These anchors come in a range of sleeve lengths and diameters. It's important that you get the right sleeve length for the wall thickness or they will not tighten up. Also, avoid the light-duty type and use the large or extra large sizes which require wall holes of about half-inch diameter. If there are solid brick walls behind the plaster or wallboard, use lead anchors with threaded brass inserts which re-

ERECTA-SHELF bookcase is one example of many free-standing units which can be built with interlocking horizontal and vertical panels made by Metropolitan Wire Goods Corp., 230 Fifth Ave., N. Y. 1.

WOODEN feet are tapped onto lower ends of uprights.

CORNERS are locked by twisting clips into parallel end wires.

SHELVES and upright panels are locked at center by tapping another clip in place.

TOP SHELF completes a bookcase. The panels can be joined in depth for holding Hi-Fi or TV cabinets.

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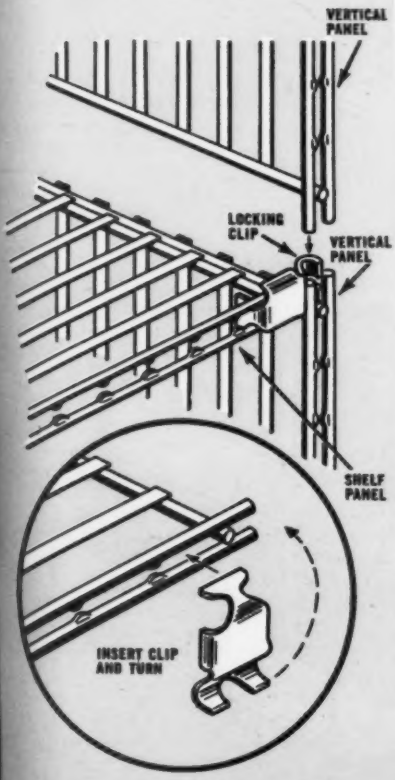
quire ¼x20 machine screws. For drilling the holes, use a star drill or a carbide-tipped drill bit.

When erecting the standards, make certain that they are plumb and that all the bracket holes for any line of shelving are on the same level. This means using a long carpenter's level; don't depend on one of those six-inch bargain types.

Any multiple shelf arrangement should be worked out on paper beforehand to give a better idea of how the finished wall will look. There's no need to stay strictly on course with shelf upon shelf. In fact, strive for considerable variation while retaining harmony and practicality. First list the things you must include, such as record player, cocktail glass cabinet, planter or inclined magazine rack. Provide for a unit as long as the wall space allows, but plan for considerable open area. This is one of the secrets of a light-looking, unencumbered unit. Also, avoid setting



WIRE SHELVES fit between studs and installation is as easy as driving a nail. Three are $1.49, ppd. Kwik-Khem Products, Inc., 3654 Grand Ave., Oakland 10, Calif.

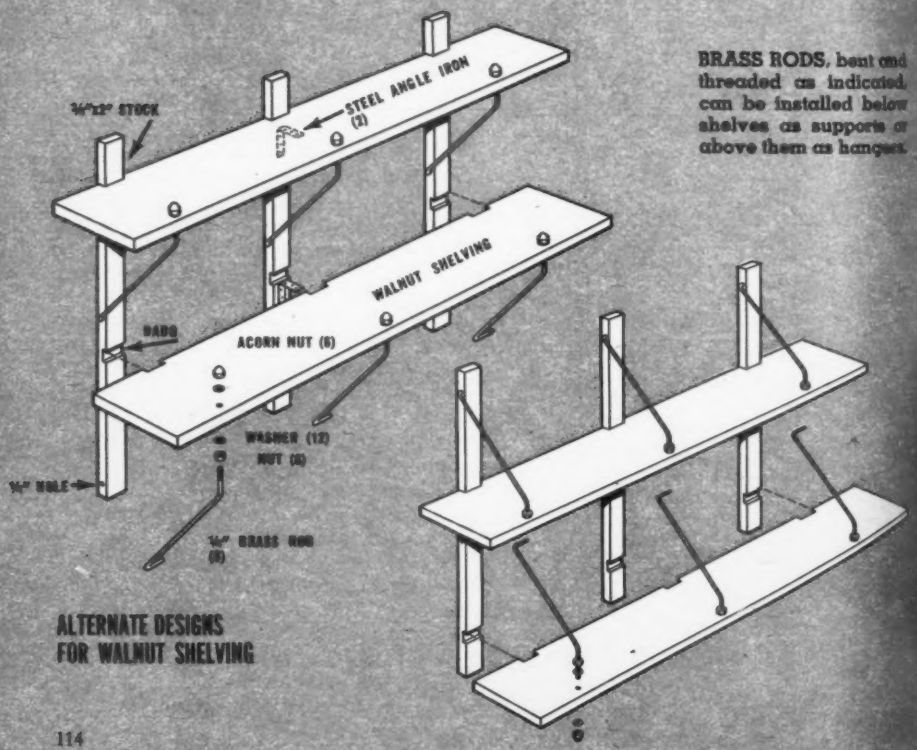
shelves of the same depth all along a line. Instead, break it up with narrow and wide ones, or at least place tilted shelves with narrow front runners as a continuation of the level which holds a bulky TV set. Locate the shallowest shelves at the top so they won't appear to overhang in the room. Shelves at the lower levels are spaced farthest apart for bigger items, so keep the upper levels only nine to ten inches apart for books and small pieces.

A novel idea for a complete wall unit is to include small cabinets with glass or wooden fronts for storage of glassware or other items. These cabinets are built of matching wood and are designed to be mounted in the same manner as the shelves. An interesting note to this scheme is that the cabinets may appear to be supported by only two thin brackets. Actually, they may be adequately mounted with a series of dowel pins passing through the back panels and into the wall standards.

When installing the shelves, make cutouts at the back so that they fit neatly around the uprights and snug against the wall. If veneered plywood is used, all exposed edges should be hidden with veneer or quarter-inch strips of matching solid wood. The end grain of solid wood should be filled, sanded smooth and finished to match.

Wood finishing is one detail that must

HANDSOME WALNUT SHELVES with brass rod supports are easily built as shown below.



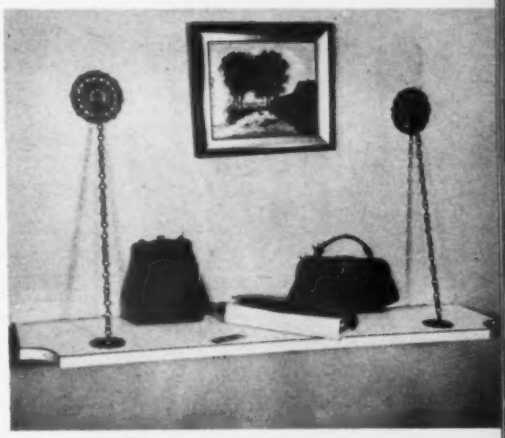
BRASS RODS, bent and threaded as indicated, can be installed below shelves as supports or above them as hangers.

ALTERNATE DESIGNS FOR WALNUT SHELVING

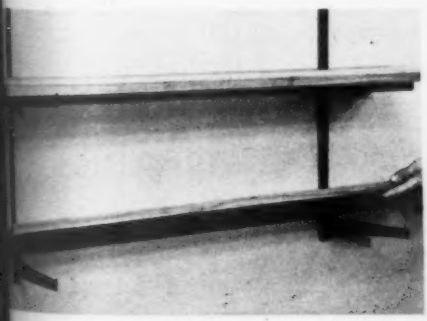
WOODEN SHELF KIT is made by Dennix Products Co., 33-04 Downing St., Flushing, N. Y. Brackets fit in slotted cleats.

PINS go through holes in cleats and brackets.

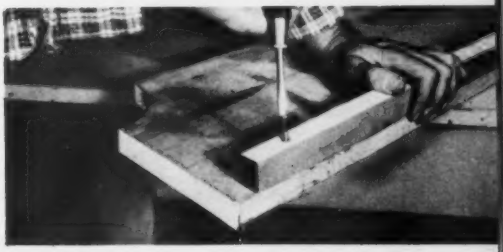
not be overlooked or rushed. Luckily, the shelf project makes this easier than with any other furniture because each shelf or cabinet can be finished separately. You'll find walnut about the easiest wood of all to bring to a fine finish. Just get the right stain color by sampling a couple of pieces and then mix enough to do the entire job. The stain is applied with a brush and quickly wiped off. This is followed by several applications of linseed or mineral oil, about two weeks apart, and each application is thoroughly wiped and hand rubbed. The result is a gleaming patina with a rich, deep color. •



ATTRACTIVE hall shelf of plastic-topped pine is hung with brass plates and chain.



STEEL uprights and locking brackets are made in baked black finish by Shelfmaker Prod. Corp., Arlington Ave., Kearny, N. J.



SCREWS hold cleat to shelf and to wall. Contact cement bonds plastic to the pine.

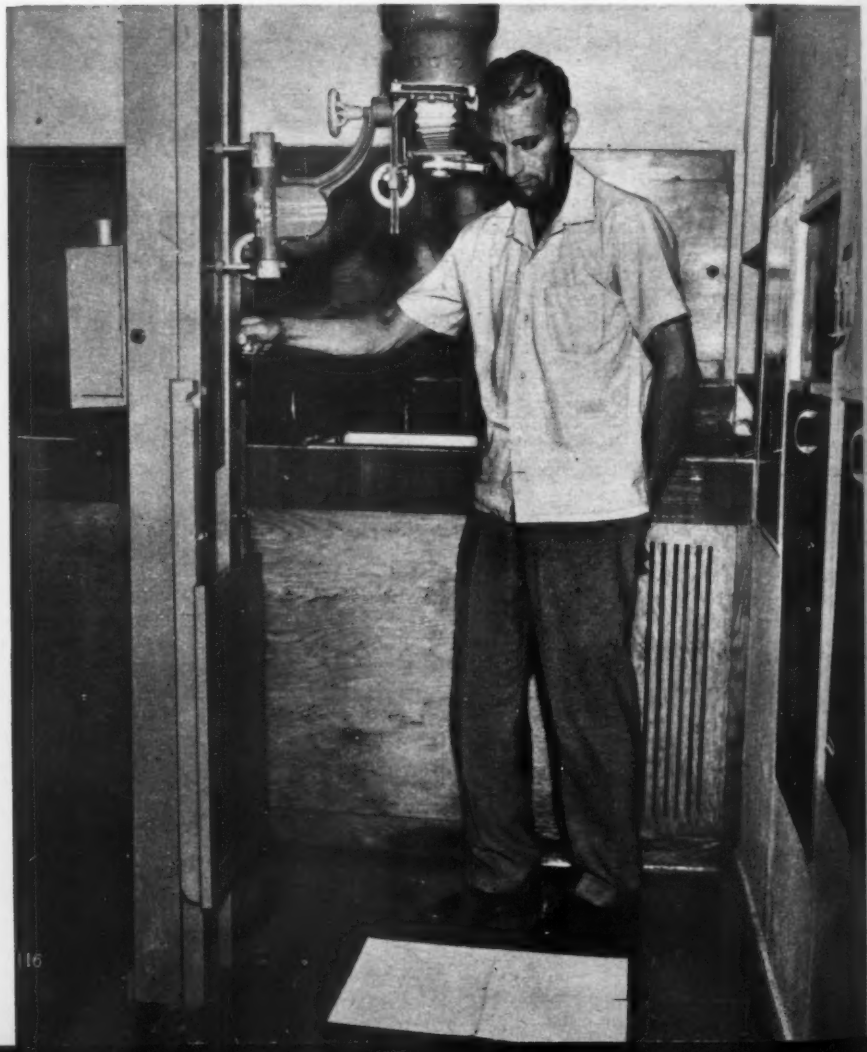
MODERNIZE YOUR ENLARGER

All the latest features are incorporated in this floor-to-ceiling enlarger column.

By William G. Waggoner

MANY of us with cherished old enlargers also have a considerable investment in special gadgets tailored to these enlargers. We hate the idea of giving them up, yet eye the latest mechanical marvels with longing. Fortunately, this time we can have our cake and eat it too.

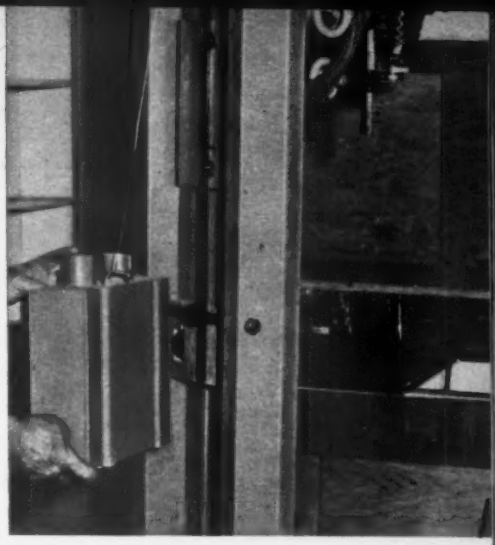
Four 2x4's, a three-foot gear rack with spur gear to match,



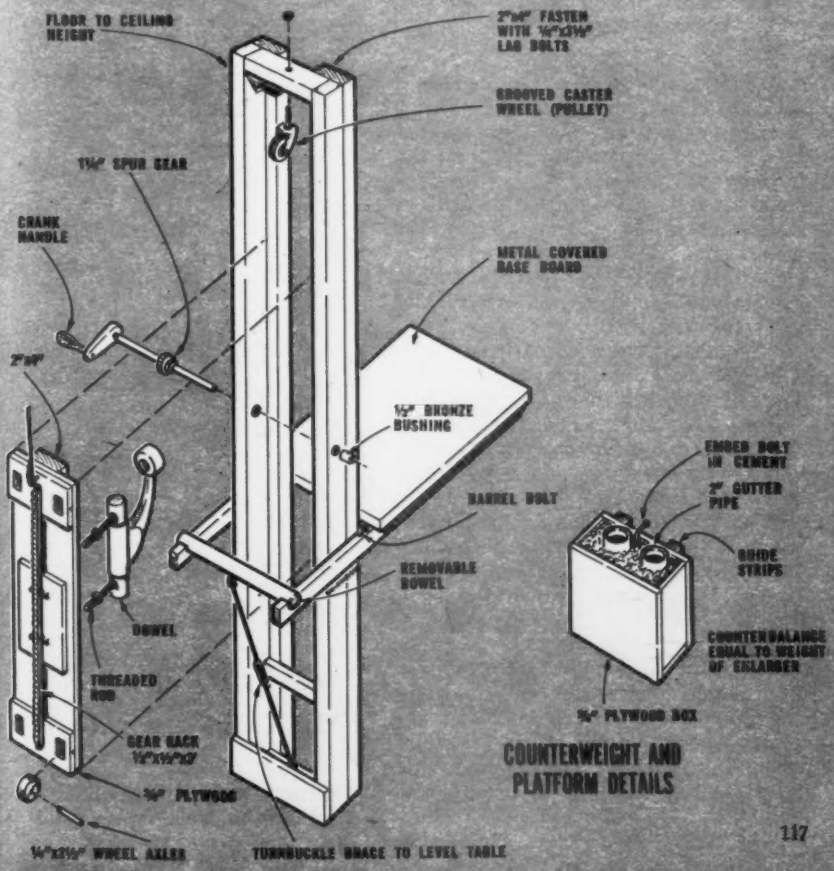
five casters and a hand crank are the main ingredients for modernizing your enlarger. You can have a floor-to-ceiling post, a folding baseboard, feather-touch control and rigidity throughout.

The post is constructed as shown in the drawing. First cut four floor-to-ceiling lengths of 2x4 lumber. These 2x4's are then joined in pairs with lag screws to form two L shapes. They are in turn joined with short pieces of 2x4 at the ends. These end pieces are cut to a length that will separate the two L shapes by the width of a 2x4 plus $\frac{1}{16}$ inch. The $\frac{1}{16}$-inch clearance is to allow the 2x4 fastened to the enlarger dolly to slide freely between the uprights.

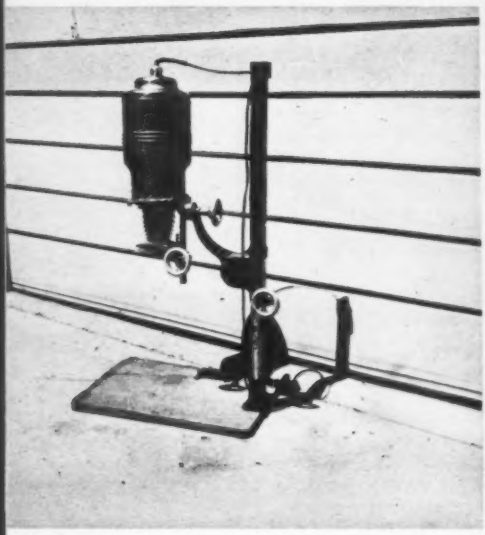
The enlarger dolly is made by first cutting a small sheet of ¾-inch plywood to a width that will slide freely in the widest opening between the L-shaped



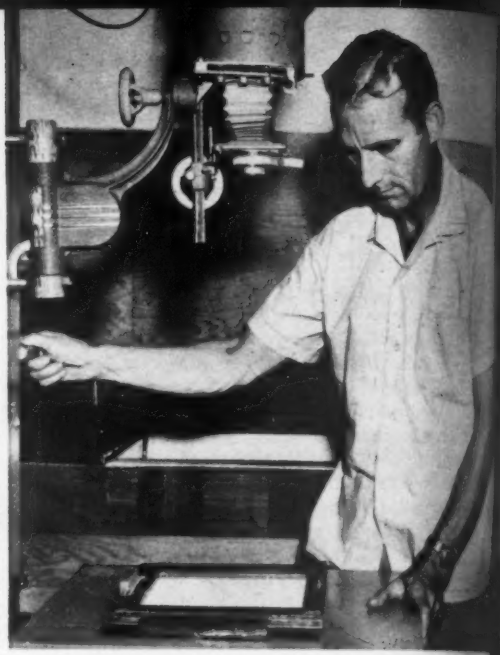
COUNTERBALANCE has cleats on inside which make it track up and down column.



COUNTERWEIGHT AND PLATFORM DETAILS



BEFORE modernization this old enlarger had to be muscled up and down the column.



AFTER, the enlarger can be racked up or down with a light turn of the hand crank.

uprights. A 2x4 of the same length is then glued and nailed down the center of this sheet; it is the 2x4 which slides in the narrowest opening between the uprights. On the other side of the plywood, at both ends and in the middle, fasten pieces of plywood about six inches wide. Holes are then cut completely through each end to accept wheels taken from old chair casters. The axles for the wheels are simply steel rods, pointed at one end and driven flush with the sides into holes drilled to a depth slightly less than their length.

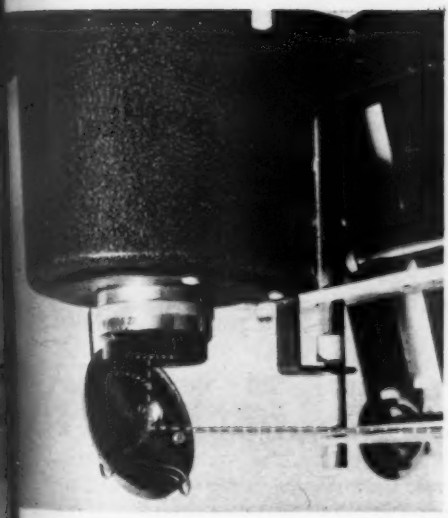
Use a short length of hardwood dowel or cut a section of the old metal column to fasten the enlarger to the dolly. Holes are drilled through as indicated and long bolts or threaded rods are used for fastening to the dolly. The ones shown are a half-inch in diameter and hold the enlarger bracket about two inches away from the dolly.

The three-foot gear rack is mounted on the centerline of the dolly. A gear tooth is filed away at each end and holes are drilled for wood screws. For additional stability, ⅛-inch holes are drilled through the sides of the rack and nails are passed through and secured to the dolly with [*Continued on page* 152]

BASEBOARD is made horizontal by using turnbuckle in brace and carpenter's level.

PHOTO SHORTS

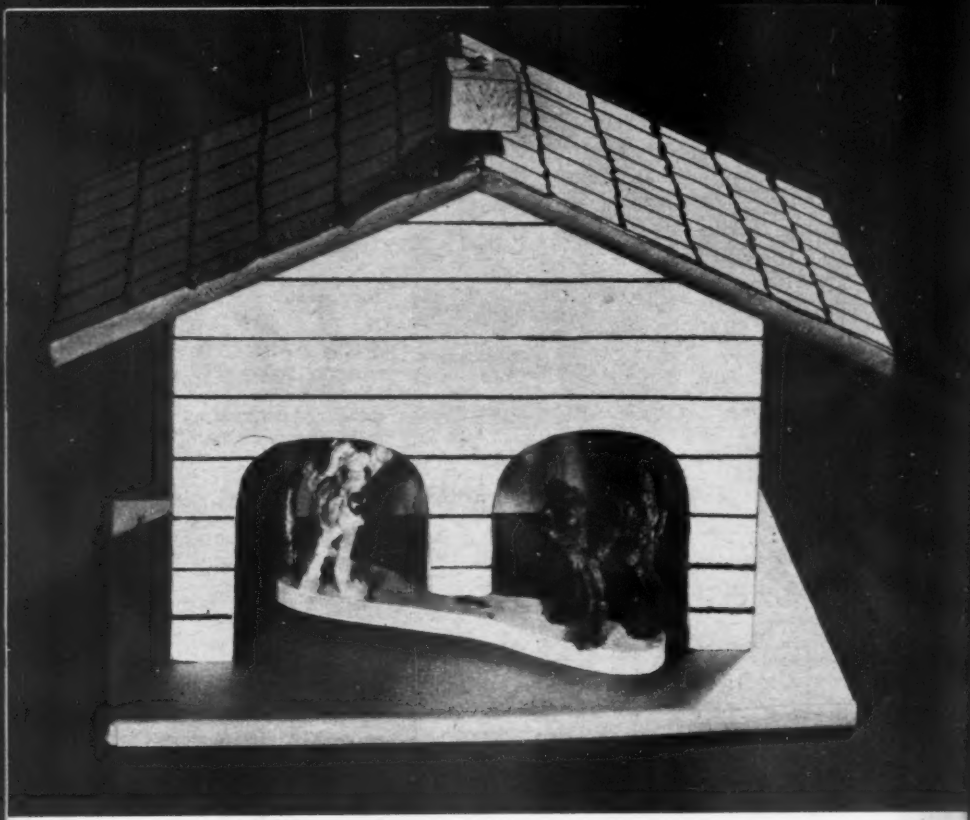
A FEW MARBLES in replenisher solution bottle give it its own characteristic sound and feel, reducing chances of confusion with developer solution bottle.



FOR BIG ENLARGEMENTS project horizontally by mounting a mirror at 45° to lens.

ENLARGER LENS can be extended (for reductions) by using Mason jar cover rims.

FILM DEVELOPING TANK is easily filled without bubbling if it is slightly tilted to one side permitting air to escape. Simplest way is to place the small filler cap under edge of tank.



MAKE YOUR OWN cat-'n'-dog weather forecaster! A few scraps of plywood, a bit of wire, half a dozen pipe cleaners, a length of catgut and a thimble of paint are all it takes.

WILL IT RAIN?

THIS novel weather indicator is fun to make and fun to watch. Operating by means of a simple méchanism which is sensitive to changes in humidity, it will indicate the appearance of damp or dry weather rather accurately.

The cottage is made of quarter-inch plywood. Bevel the edges of the two roof pieces where they meet at the peak. Now assemble the front, sides, roof and base—the back is fastened on later—and paint the little house according to your whim.

The platform for the "wet" and "dry" figures is also cut from quarter-inch plywood and is suspended in place by a length of catgut and a thin, stiff wire about four inches long. Drill a small hole through the center of this piece and another about a quarter-inch to one side. Bend one end of the wire into a loop, then run the catgut and the straight end of the wire through the center hole in the platform. Now bend this end of the wire into a U-shape and tie the end of the catgut around it. Push the short leg of the U through the off-center hole and clinch the end against the top side of the platform. Finally, bring the catgut up along the back of the wire and thread it through the loop from back to front.

At this point you can make the two "wet" and "dry" figures. These are fashioned from colored pipe cleaners. Shape the "wet" figure into the form of a little black cat with its tail up and

PASS wire and catgut through center hole of platform, then tie catgut to U of wire.

APPLY GLUE to feet of the pipe-cleaner figurines to secure them to the platform.

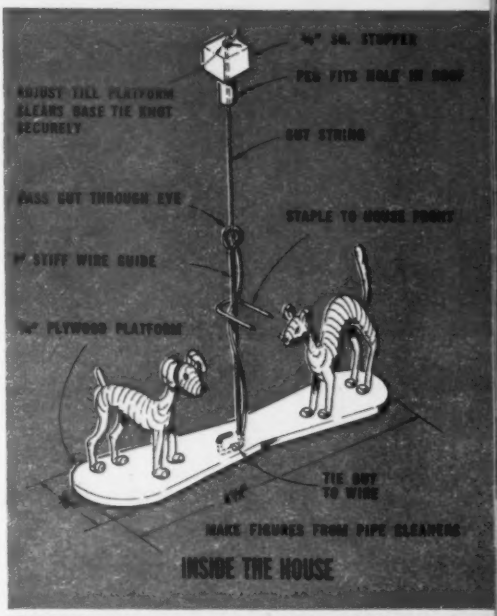
its back humped. The "dry" figure can be made in the likeness of a little white or brown dog. Now glue the figures by their feet to each end of the platform.

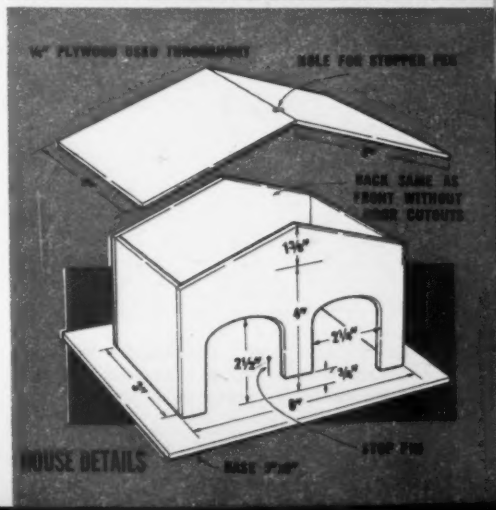
Cut half the length of the ¾x1½-inch stopper block to resemble a chimney; whittle the other half to a round peg about a quarter-inch in diameter. Drill a small hole through the center of this pegged block and another through the roof gable where the stopper is then inserted.

Thread the free end of the catgut through the hole in the stopper block and out through the top of the chimney. Draw up the catgut until the platform is hanging free just above the base before knotting it at the top to secure the platform at this height.

Drive a small staple into the back of the center stanchion of the house to keep the wire lined up properly, and a brad into the base about a half-inch behind the center of the platform to prevent either figure from swinging more than halfway around on its axis. Now secure the back of the house in place with a couple of brads or small wood screws.

To set the forecaster, check the weather reports until the humidity is reported at about 50 per cent. Then twist the chimney until each figure stands exactly over the threshold of its own doorway. As the humidity changes the catgut will either contract or expand; in so doing it will cause one or the other ends of the platform to move in or out, thus predicting the weather.—*W. and E. Waltner*





HOW TO INSTALL

The treatment of problem windows and walls.

This window has two adjacent walls of unequal width. Drapes disguise this fact as shown in the large picture at the top.

By Lyman G. Gaylord

WINDOWS are wonderful. As a matter of fact a lot of us pay premium prices to get houses or apartments with more and bigger windows. But there are times when all of us want to shut out the world outside. We don't want people peering in; instead we want the feeling of privacy and security that comes from knowing that others can't see in. It's just this kind of privacy that window drapes, curtains, blinds, shades and a number of special window covering materials are intended to achieve.

But there are a lot of other things you can accomplish with window coverings of one kind or another besides gaining privacy. Drapes, curtains, shades can

FIRST STEP is to measure overhang of sill. Make sure drapes will clear it when hung.

TRANSFER this measurement to ceiling and make allowance for any trim on ceiling.

all add a distinctive decorative touch. You can make rooms look wider or taller; smaller or larger. You can use drapes to cut down on heat loss during the winter. Window coverings can also keep your home cooler in the summer. Street noises can be reduced. Special moods and effects can be created with the right combinations of colors, materials and styles.

Manufacturers of fabrics and hardware for window coverings have kept these ideas in mind during the development of their multi-million dollar business that is mainly a do-it-yourself market.

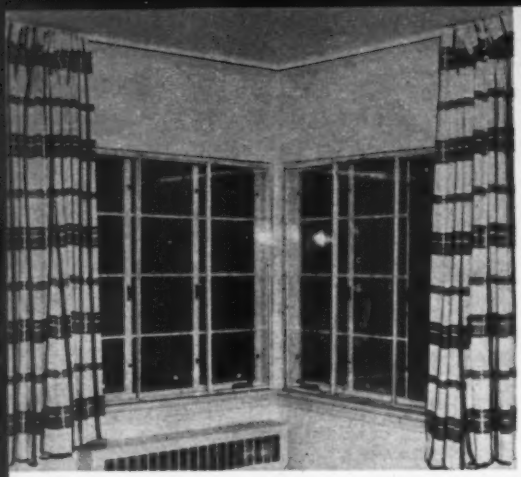
True, you can have a decorator do it for you. But why pay someone else to make your home look the way *they* want it to when it's so easy to have it look the way *you* want it to. After all, *you* are going to live in it.

Drapery HARDWARE

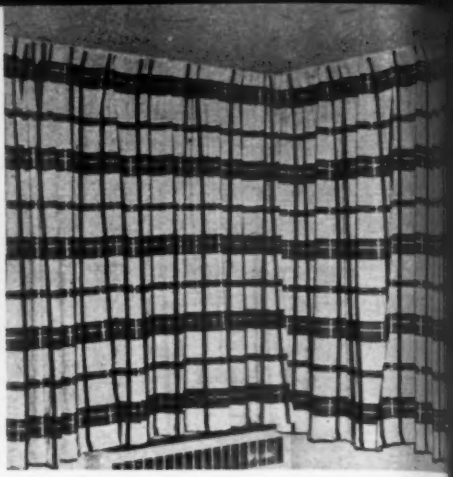
Creating the illusion of height and depth.

A CUSTOM-MADE traverse rod may sometimes require slight cutting to fit into place. Then re-install the end mounting bracket.

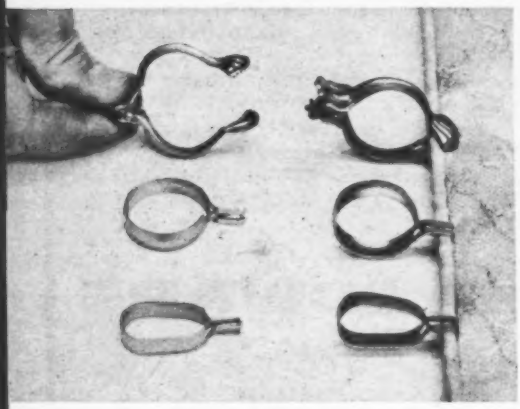
HAVE AN ASSISTANT hold the traverse rod in place while you drill required holes. Finished installation is on facing page.



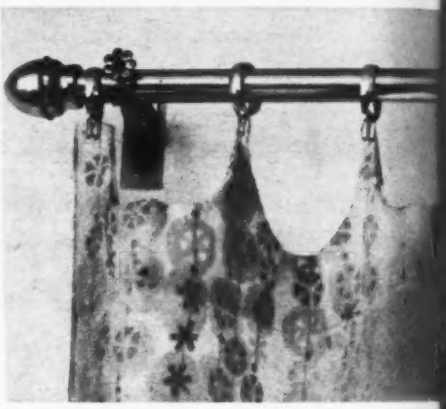
A DOUBLE CORNER window such as this one is best treated with a drape at each side.



TRAVERSE hardware is made to close both drapes with single pull or separate pulls.



SOME OF THE MANY spring-loaded drapery holders made to eliminate sewing.



THIS HOLLOW brass tube can be pulled out to fit windows up to ten feet in width.

First, decide upon the type of window treatment you want. Consult the booklets put out by the manufacturers of drapery and curtain hardware. (The Kirsch Co. in Sturgis, Michigan puts out an excellent series of such booklets). Most department stores have window covering departments with mock-ups of different types of windows so you can see what different drapery materials and arrangements actually look like.

Drapes are either *totally opaque* or *translucent* materials hung up to provide the maximum decorative effect. They can be used with all types of windows and are suitable for all rooms with the exception of bathrooms and kitchens. (These rooms usually take curtains). Their use in a child's room is questionable. Drapes can either be hung on so-called "traverse rods" which make it possible to open and close them by pulling on a cord; or on hinged rods with each drape covering only part of the window width.

Traverse rods can be cut to order for use around corners and with bay windows. There are also special rods which allow hanging a drapery from an inner traverse mechanism with a valance across the top and in front of the drape. Plain "stationary" curtain rods can also

be used. When these are used, the drapes must be pulled open and closed by pulling on the material itself. Drapes can also be hung so that they are immovable. Generally, drapes extend *all the way* to the floor but *sill length* drapes are possible.

Draperies are the most formal kind of window covering you can use. They tend to draw attention to themselves and can completely dominate a room if you are not careful. The less obtrusive the color of the drapery (the more nearly it approaches the color of the surrounding walls) the less the tendency to dominate.

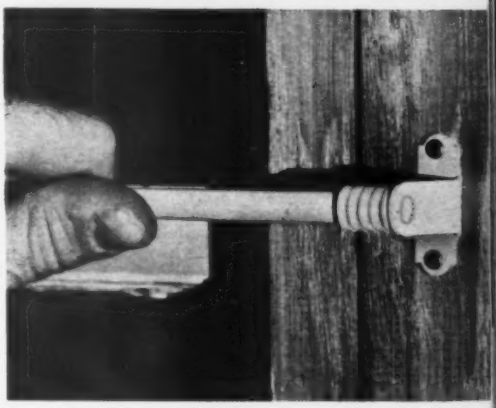
Drapery material prices cover such a wide range that there's little point in quoting any. Hardware prices are reasonable. For example, a traverse rod purchased in an average New York City department store costs about five dollars. A rod for this price will cover windows up to 15 feet and will handle material of any weight. The price includes all the mounting screws you'll need plus complete instructions on how to put it up on either the window frame, the wall or the ceiling.

Carrying draperies two or three feet *beyond* the width of the window frame is a very good way of giving the impression of a much larger window. It also insures that when the draperies are open that the full useable width of the window will be in view. Ceiling mounting gives a feeling of greater height.

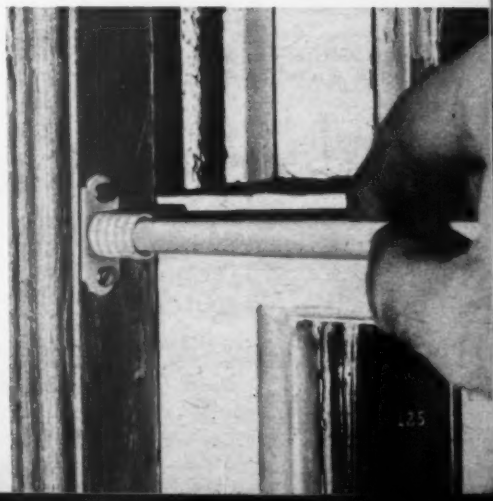
Curtains are generally lighter in weight than drapes and range from almost totally transparent to translucent. The main job of a curtain is to block vision through windows and not to create a decorative effect independent of the window as is the case with drapes. A curtain depends for its decorative effect on the light coming in through a window or on its arrangement within or around the window frame. Curtains are less formal than draperies and are suitable for use with all types of windows in all rooms.

Draperies and curtains can be combined over a single window to achieve

SPRING-LOADED curtain rod bears against window casement; eliminates all screws.

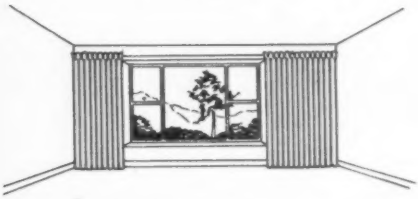


THIS TYPE of curtain rod hardware is used for mounting on outside of window frame.

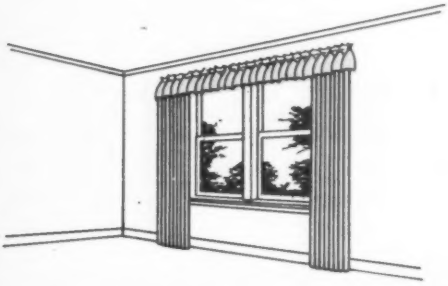


THIS TYPE is used when the curtains are to hang inside the window frame. In both types barrel is unscrewed to insert rod.

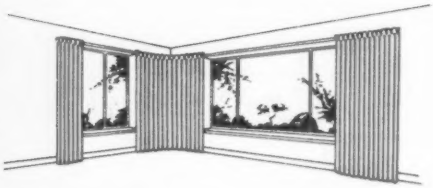
JAPANESE shutters lined with rice paper or laminated plastics for a modern house.



LARGE WINDOW, out of center in relation to wall, is treated with full wall drapes.



MULLION-SEPARATED double hung window is draped as single unit with valance.



CURVED ROD in center permits stacking of large drapes to extend to adjacent walls.

special effects. For this purpose you need double traverse rods. These allow you to hang the curtain on the inner rod and the drape on the outer rod; either curtain or drape can be opened or closed independently.

Recently a special type of curtain known as the cafe curtain has become very popular. This type covers only half of the window. The whole window can be covered with upper and lower sets of cafe curtains. Special round rods are available for this kind of arrangement.

Blinds are designed to open and close from bottom to top instead of side to side as with drapes and curtains. Blinds are much less formal than curtains or drapes although handled correctly they can fit in with any decor in any room on the modern side. Most familiar of this type of window covering is the Venetian blind. It has a good combination of functionalism and smart appearance.

Quite popular is the bamboo kind, formerly known as the Chinese blind but since renamed for the Japanese. These are available in two types; slat and matchstick. The slat type uses bamboo strips from about ⅜-inch to ½-inch in width. The matchstick type uses long reed-like lengths of bamboo about ⅛-inch in diameter. Widths up

OLD-FASHIONED wood window shutters are again becoming popular; inside mounting.

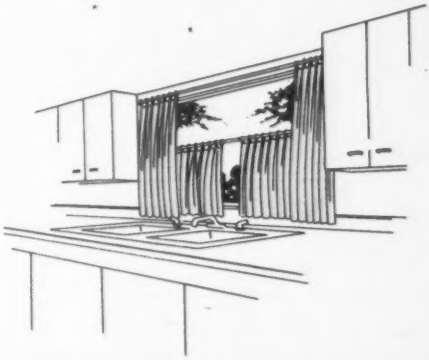
to ten feet are common, two can be used for a wide wall treatment. Both kinds of bamboo blinds allow a lot of light to enter during the day while at the same time giving a comfortable sense of privacy. A word of caution, however. Bamboo blinds offer practically no privacy at night and if you want to use them you had better mount an old fashioned roll-up shade behind them.

Bamboo blinds are opened and closed by means of a pulley and cord arrangement. You can also get bamboo blinds for hanging on regular curtain rods so that they can be opened and closed from the side.

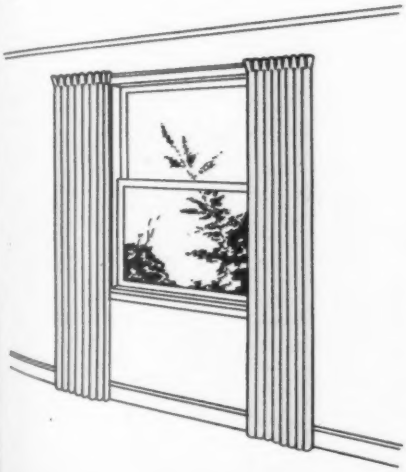
Shades are best typified by the old fashioned roll-up shade that uses an internal spring in the roller. These come in many colors. A number of materials, some plain and some embossed with designs are available. Possibly the best bet, particularly in kitchens and kids' rooms, are the washable plastic types. The price of one of these for a window width from 23 to 37 inches is an eyelash under four dollars.

For those who want to go to the trouble, special effects can be created by purchasing the cheapest roll-up shades available and removing the original shade ma- [*Continued on page* 146]

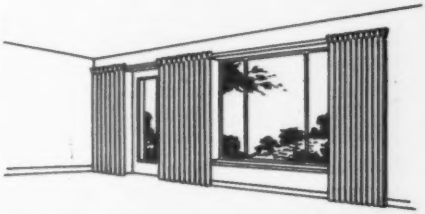
CURTAIN treatment in a bedroom. They extend only to sill or just below apron.



CAFE CURTAINS are used in kitchens. Hardware consists of brass rings, tubing.



CARRYING drapes well beyond the window frame creates impression of wide windows.



SMALL BROKEN up walls will look like one large wall when the drapes are closed.

THE NEW TEMPEST

In its station wagon version Pontiac's new compact, the Tempest, shows off clean lines.

By Frederick C. Russell

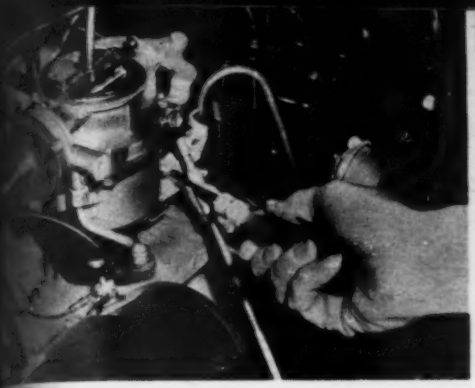
Member, Society of Automotive Engineers

CAR CARE

THERE is so much that is different about the Tempest, Pontiac's new compact, that it is difficult not to become over-excited. The big difference from the engineering point of view is that while the engine is in its traditional place in front, the transmission has been moved to the rear. This is calculated to give a more even distribution of weight with a consequent improvement in traction.

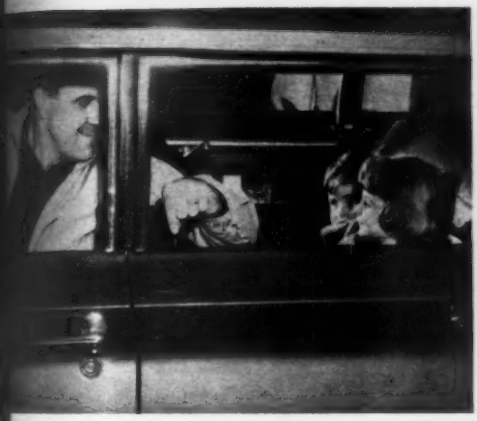
The drive is transmitted by a most unusual "rope" propeller shaft which operates in a bent position. Made of triple alloy forged steel this slender shaft (¾-inch thick for the manual gearbox cars and ⅝-inch for the automatics) not only permits lowering of the car flooring but also helps check the vibration inherent in four-cylinder engines. There's a torque tube encircling the shaft and bearings to support the latter, but no driveline universals. At the rear there is a splined junction. Special universals, however, do serve to connect the axle shafts to the differential side gears. These joints are of the roller bearing type, requiring cleaning and repacking every 25,000 miles.

Lifting the hood is the real eye-opener. The standard 110-horsepower slanted four-cylinder power plant is actually one-half a V8, but there are 11 other engines optional with the Tempest. The fours have a choice of three compression ratios. Engines are also available with both one and two-barrel carburetors. For accessibility the Tempest four-cylinder motor is ideal because the intake manifold, carburetor, fuel pump, starter and generator are all on the left side and without clutter. This engine, as it needs special rigidity, has a cast-iron



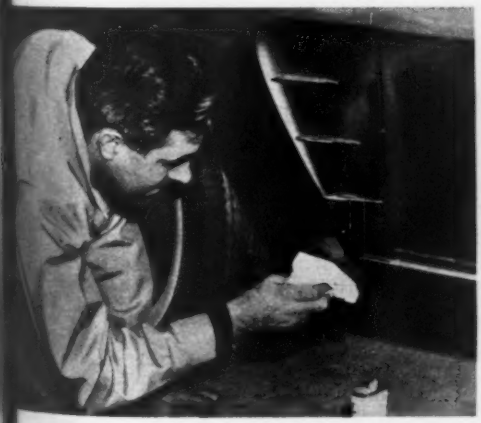
FOUR-CYLINDER ENGINE after adjustment should have idling speed of 680-700 rpm.

SPECIAL JACK is supplied, has jacking points beneath the body inside each fender.



SAFETY CATCH prevents chance opening of rear doors by children moving handle.

HOOD RELEASE LATCH is located by right hand under the center of the front bumper.



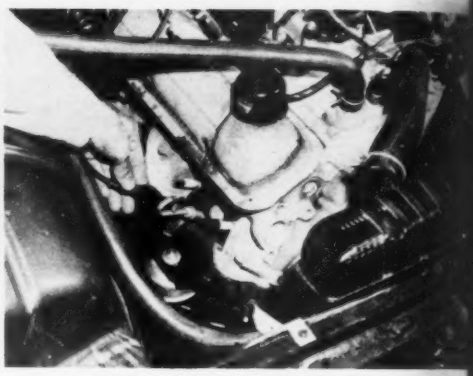
TAR AND OIL should be removed using a cleaner marked for use on acrylic finish.

REAR-VIEW MIRROR can be turned upside down, if desired, to give best visibility.

SIGN OF WEAR in wheel bearings or ball joints is tendency to rock when jacked up.

STANDARD AIR CLEANER is oil moistened aluminum mesh, alternately polyurethane.

EACH JACK on which hood rests may be adjusted to give desired secure seating.



SPARK PLUGS which are easy to get at show accessibility of 4-cylinder engine.

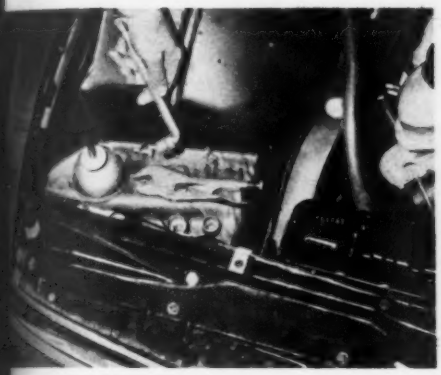
block. There is also an aluminum block V8 with 215 cubic-inch displacement and a 9-to-1 compression ratio.

Tempest's automatic gearbox is an air-cooled, three-element torque converter with a two-forward-speed planetary transmission. Instead of being mounted right behind the engine it is attached to the differential carrier assembly between the rear wheels to form what amounts to a transaxle, the converter being mounted on the opposite side of the carrier from the transmission. This calls for two shafts which run axially through the differential pinion shaft so that torque from the engine is transmitted to the converter and then back to the transmission assembly. You can start the Tempest engine by pushing the car when it is equipped with this automatic, something that can't be done with some of the latest automatic gearboxes.

The swing-axle rear suspension on Tempest involves use of coil springs and a control arm somewhat resembling the ball-joint front suspension. This provides independent action of each rear wheel. There is a special differential mount insulator and also special insulation of the rear suspension-to-body mounting components. In spite of this the rear suspension requires little attention. Before checking rear suspension alignment be sure to check curb height by jouncing the rear and the front of the car up and down, gradually decreasing the amount of movement until parts

reach normal position. Measure rear height directly behind the spring; front height just in front of the spring. You can't adjust one wheel at a time as shims have to be added or removed equally from each side.

Taking a break from all this technical talk and turning to body care we find Tempest's makers recommending a waxing of the acrylic finish at the time of delivery. Keep on polishing and waxing as needed. But when removing road oil or tar, make sure that the cleaning agent will not harm the finish. The radiator grille's upper molding and the headlight doors are of aluminum and



LEDGE at left of radiator makes a handy tool catch-all when engine is worked on.

should be merely washed with lukewarm water or a mild soap. Do not use chrome polish for aluminum. Don't try to remove the car's carpeting for cleaning as it is either cemented or tacked down. Use volatile type cleansers but don't soak with the cleaning fluid. Soap and water can be used but there's the risk of removing the color. In cleaning the upholstery, Pontiac warns against use of lacquer thinners, leaded gasoline, laundry soaps or bleaches, acetone or hydrogen peroxide.

There are certain parts not covered by the internal oil system which should be lubricated from time to time. For example, linkage for the accelerator and the automatic transmission throttle should be kept [*Continued on page* 138]

SERVICE TIPS

from Detroit

When tightening connections on 1961 Chrysler and Imperial brake lines be sure to use two wrenches, one to hold the connection or brake hose and the other to tighten the fitting nut. Make certain that hoses are not twisted and are properly held in place by retaining clips so they do not come in contact with other parts.

* * *

Frequent fuse replacement for 1960 Falcon turning signal and auxiliary circuits or a continuous full reading on the fuel gauge may be caused by a scuff plate screw cutting insulation on the wire harness and grounding the wires. To correct this wires should be taped individually and the tab bent down so as to shield the wire from the screw.

* * *

On earlier 1961 Larks the instrument cluster glass may fog up. This is due to evaporation of moisture absorbed by the tabular light shields within the cluster housing. Improved shields are now in production and may be installed on earlier built cars where the fogging condition exists.

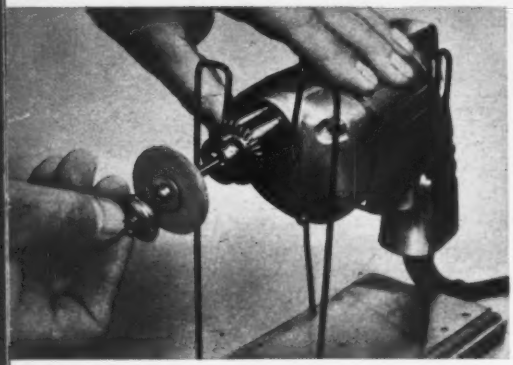
* * *

Valiant, Plymouth and DeSoto owners who have difficulty starting in cold weather may find it is caused by sticking of choke vacuum unloader piston. Gummy substance formed on piston must be removed by flushing with solvent.

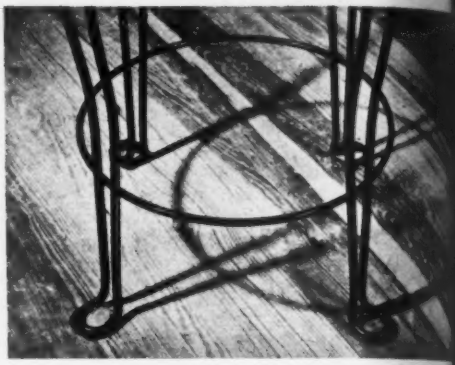
* * *

Corvair and LDFC carburetors (7019100, 7019101 and 7019107) on vehicles equipped with a direct air heater sometimes emit gasoline fumes when the heater mixing valve is opened. The main source of the fuel vapor is a 1/16-inch external vent hole located in the air horn casting. To eliminate odor the carburetor external vent should be closed with a 3/32-inch lead ball.

HOME AND SHOP SHORTS



LONG BOLT, two washers and a nut turn a typist's eraser into a polishing wheel.



PROTECT wood floors by gluing inner tube patches to legs of "wire" tables and chairs.

SLIDING METAL BAND bent onto yardstick facilitates the transfer of measurements.

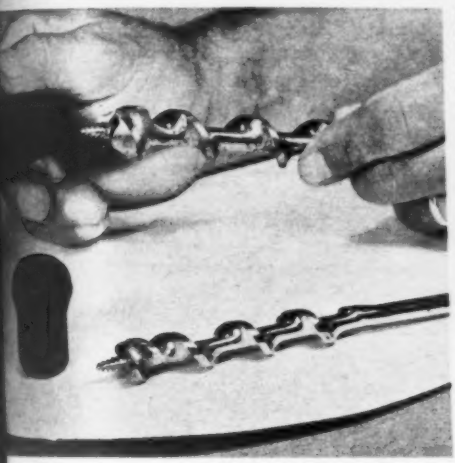
TAPE outside water pipes, then wrap them in aluminum foil to prevent possible freezing.

Send Freddie Fumbles your idea of a good short-cut time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a post card only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.

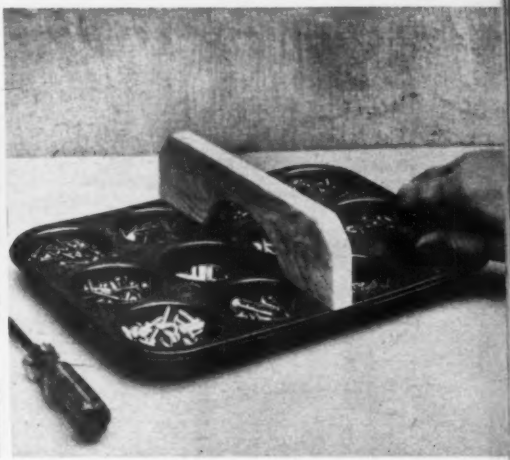
FREDDIE FUMBLES

GROOVED WEDGE made from scrap provides mar-free leverage for pulling out nails.

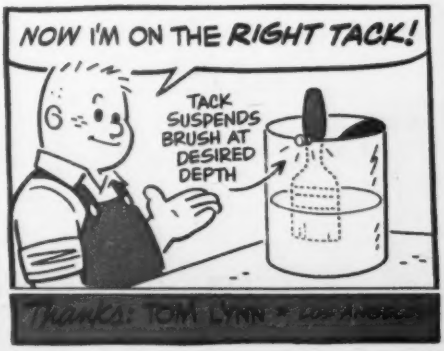
CARBON PAPER between frame and edge of tight door shows up high spots for planing.



BEFORE putting away augers, protect their cutting edges with rubber crutch tips.



ADD A HANDLE to a muffin pan and you've made yourself a tote tray for small parts.



Thanks: TOM LYNN * LOS ANGELES

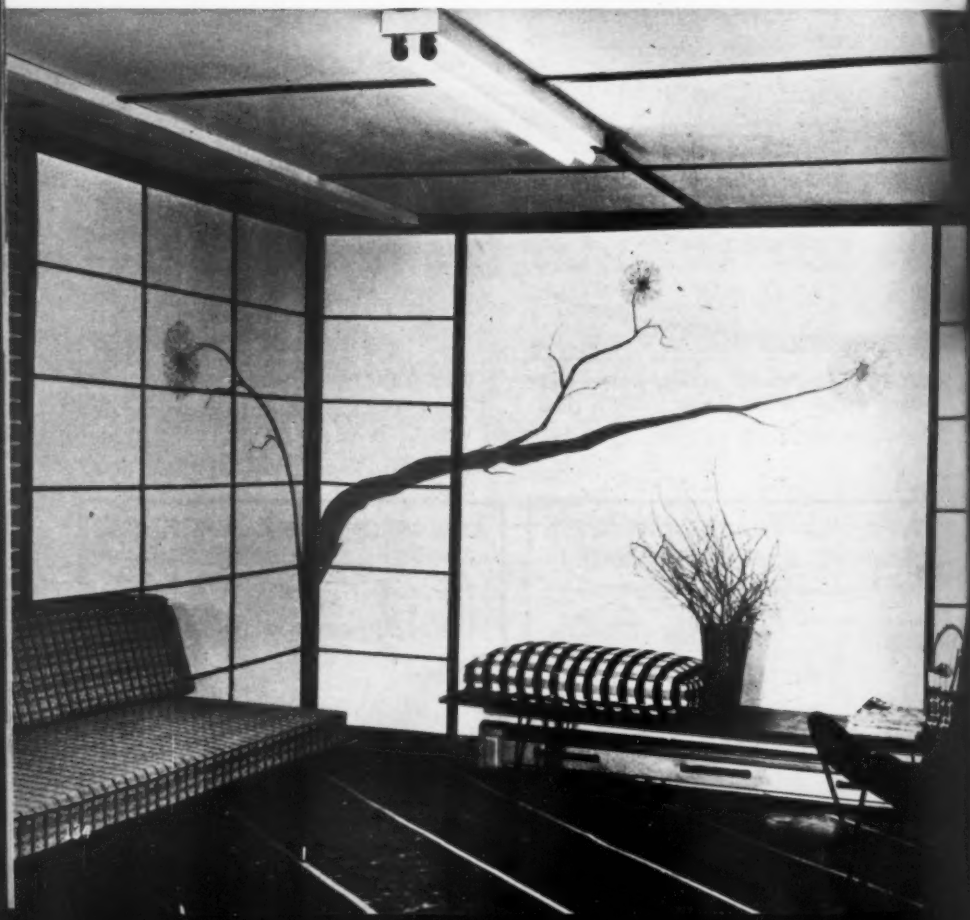
Shoji Wall

Thin wooden strips fastened over a simple tree and flower painting make this decorative wall.

By Ralph Bosun

A FEW strokes of a paint brush and some thin wooden strips arranged in the traditional Shoji screen pattern will produce a sparkling playroom wall which is low in cost and much more attractive than ordinary wall paper.

Painting the totally imaginative thistles and tree branches is the most fun of all. Brush aside any hesitancy about your artistic



PENCIL drawing is worked out first. It can be changed until it suits and then painted over.

PAINT is applied over the outline with long, light strokes. Remember that the aim is to produce a pleasing design—not a painting with photographic realism.

STRIPS are ripped in three widths from trellis stock and then painted flat black.

GLUE AND BRADS secure strips which go over painting and lend depth to the wall.

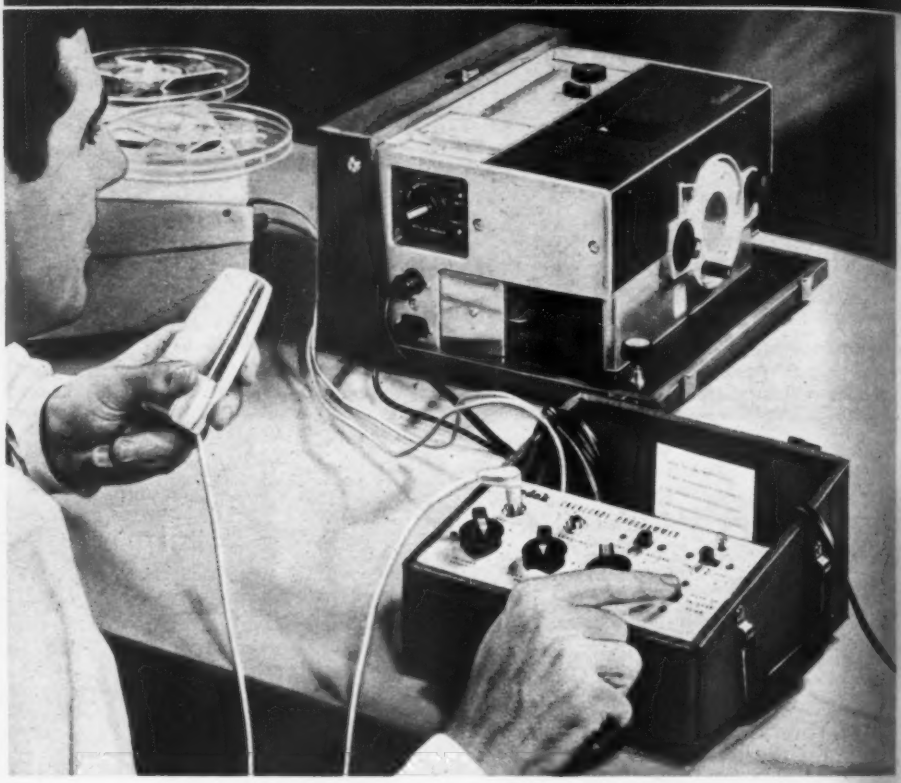
ability; chances are you can paint as well as the next fellow—and you'll have a permanent exhibit to prove it.

The walls (gypsum wallboard in this case) should first be covered with a coat of stark white latex paint. With a roller, you can do this in minutes. Next, outline your tree design in pencil. Use a one-inch sash brush for the larger areas and an artist's brush for the slender twigs and the fine thistle lines. The paint should be a medium gray to blend with the white background.

For the strips, use standard ¼x¼-inch trellis [*Continued on page* 153]

EACH thin horizontal strip is cut to fit snugly between verticals before fastening.

New Ideas in Photography



How to make a slide show—with synchronized sound!

New Kodak Programmer lets you add voices, music, sound effects to any series of slides

An ingenious new unit by Kodak brings synchronized sound to slide presentations. The Kodak Cavalcade Programmer, Model 1, enables you to add taped music, comments or sound effects to go with any set of slides at do-it-yourself cost.

How it Works

You simply connect the Programmer to a tape recorder and any Kodak Cavalcade Projector. Speak into the microphone. After your narration for each slide, press a button on the Programmer. This puts a "tripper signal" on the tape.

In playback, the same hookup is used. Your taped narration comes through just as you recorded it, and the taped signals cause each slide to change at the correct moment.

Continuous Showings Possible

With the special Kodak Cavalcade Repeating Projector, and a repeater-type tape recorder, continuous shows can be programmed. The show will repeat until you turn the equipment off.

Price of the Kodak Cavalcade Programmer is less than $96. Kodak Cavalcade Projectors are priced from less than $110. See your Kodak dealer for exact retail prices.

from Kodak

Vacuum Coating Helps Tiny Reflectors Put More Light on the Subject

A tissue-thin layer of aluminum—*only two molecules thick*—gives the small, built-in reflector on this Brownie Starmite Camera (see photo at right) its bright, mirror-like finish.

Vaporized aluminum is deposited on the reflectors as they turn on racks inside big vacuum ovens.

The result: reflectors for Brownie Starmite and Starflash Cameras provide more reflected light than many units twice their size. An invisible lacquer coating prevents fingerprints from injuring the sparkling mirror-bright surface.

These pint-size reflectors from Kodak pay off in smaller cameras and clearer pictures for you.

Only 2 inches in diameter, the reflector on this Brownie Starmite Camera has a Lumiclad "mirror finish" that enables it to reflect and direct more light than some units twice as large.

Zoom lens on Kodak Cavalcade slide projector.

Kodak Cine Showtime movie projector also has zoom lens.

New Zoom Projection "Shrinks" or "Stretches" Your Living Room

Zoom projection is here—and it can "shorten" or "stretch" your living room when you're showing slides or movies. Just set up your projector at the most convenient point—for a few guests or a large party. Then slide the lens back or forward, to make image exactly fill your screen.

Zoom lenses can also be used to "zoom up" picture areas of special interest when showing slides. These lenses can be purchased separately—or as standard equipment on new Kodak Cavalcade and Showtime Projectors.

Prices are subject to change without notice.

Picture it now—enjoy it again and again

EASTMAN KODAK COMPANY, Rochester 4, N.Y.

Kodak TRADEMARK

See Kodak's "The Ed Sullivan Show" and "The Adventures of Ozzie and Harriet"

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YUBA POWER PRODUCTS, INC.
800 EVANS ST., CINCINNATI 4, OHIO

A Subsidiary of YUBA CONSOLIDATED INDUSTRIES, INC.

The New Tempest

[*Continued from page* 131]

clean and oiled. Engine oil is also recommended for all clutch linkage on cars with a stick shift. The countershaft of Tempests with the V8 engine needs chassis grease. While you're at it give the hinge pin of that fuel tank door a few drops of oil. Lubriplate should be used for coating the front-door hinges hold-open springs and the friction surface on the rear door hold-open straps. Over-lubricating the speedometer cable should be avoided. It must first be removed from the top and should never be lubricated for the upper third of its length. The power steering consists of a vane type pump, control valve and a double-acting booster cylinder which drives the steering linkage in either direction. It has two special lube points which should be included in the general chassis greasing.

Hydraulic valve lifters are used for all the Tempest engines so it is important to follow Pontiac recommendations for oil. Only those oils identified as "For service MS or DG" should be used. They can be either single viscosity oils of 20W grade for 10° above, or multi-viscosity 10W-30 for these same temperature ranges. If the car is operated in extremely cold climates, 10° below and colder, use 5W or 5W-30. Pontiac engineers merit a special award for coming right out and saying that "average driving conditions such as short-trip winter driving (less than 10 miles average per trip) makes it advisable to change oil every month."

While the dry capacity of the transmission is 12 pints, normal refills require only six pints. Oil changes for this unit are not recommended but it is important to keep the level up without overfilling. You'll find the oil level indicator under a plate located in the right front of the luggage compartment. Just one pint represents the difference between the "full" and the "add oil" mark. Remember the rule about checking with engine idling, transmission oil at normal temperature and the control lever in N.

Whether you rely on Guardian Maintenance by GM dealers or are obliged to do some of the pampering of your new Tempest yourself, it pays to know this new compact's special needs. •

Tips from Weldwood—the people who know what's good for wood

Kill termites, prevent rot with WELDWOOD WOOD PRESERVATIVE . . .

Add lasting color to outdoor wood with WELDWOOD EXTERIOR STAINS . . .

Seal and prime outdoor wood with WELDWOOD FIRZITE . . .

Protect and beautify outdoor wood with WELDWOOD SPAR VARNISH . . .

WELDWOOD® WOOD PRESERVATIVE, essential where wood is in contact with earth, contains full 5% pentachlorophenol.

WELDWOOD EXTERIOR STAINS, 4 beautiful "woodsy" colors: Redwood, Driftwood, Cascade Green, Sierra Brown.

WELDWOOD FIRZITE®, a penetrating resin-sealer for fir plywood, pine, etc. Comes in *Clear* to prevent "wild grain" in stain jobs; and in *White*, a pigmented prime coat to combat checking in paint jobs.

WELDWOOD SPAR VARNISH, durable, high gloss exterior clear finish that resists discoloring even in severe weather.

WELDWOOD
WOOD FINISHES

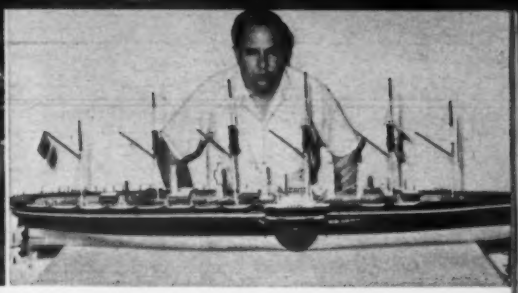
Golden Hammer Award Winners

REBUILT from the cellar up by L. Mandel of Cleveland Ohio, over 100 years after its original erection, this house combines modern comfort with the charm of the old world.

Each craftsman whose project is shown receives a 24-karat gold-plated Hammer and a Workbench Award Certificate. Runners-up will be sent a beautiful gold-plated Golden Hammer Tie Bar or MI's Certificate of Merit. So send us some *black-and-white photos*, with *negatives*, and a full description of your latest project. Photos of your workshop are also eligible. Send all entries, with return postage, to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N. Y. Entrants are advised that MECHANIX ILLUSTRATED cannot accept responsibility for customs charges, duties, taxes, etc., levied against Golden Hammer and Golden Hammer Tie Bar winners outside the United States.

The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: Ernest Pratt, West Hartford, Conn. . . Rev. Paul W. Carter, Amherst, Va. . . Joseph A. Delporto, Sacramento, Calif. . . Douglas Houston Cosper, Hueytown, Ala. . . Ted Carr, Chicago, Ill. . . Harold I. Hanson, Cloquet, Minn. . . Vennon L. Collamore, Scott City, Kan. . . Stan Schirmacher, Tempe, Ariz. . . Herbert T. Street, Mullins, S. C. . . Russell Hull, West Seneca. [Continued on page 153]

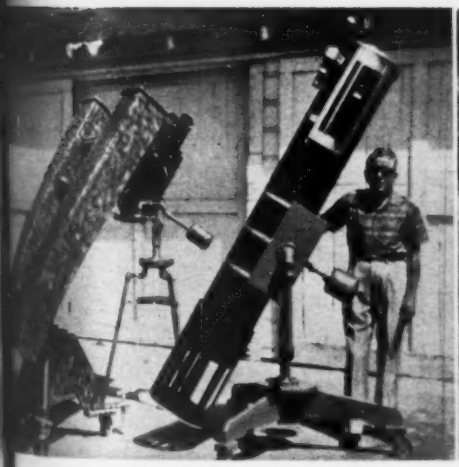
BARNABY cabin cruiser took William Wire of San Paulo, Calif., a year to build at cost of $250 using MI plans. With four aboard she goes over the water at 22 mph.



AUTHENTIC MODEL of Great Eastern was hand carved in three years' spare time by Edward A. Mueller of Chattahoochee, Fla., who worked from copies of original plans.

TRAILER was joint five-month effort of Des Moines, Iowa couple, Merrell Steele and wife. They drew up plans using own ideas and those taken from other trailers.

ATTRACTIVE GARAGE which was converted from a very ordinary one by Edward Young of Niles, Ohio, has workshop at side and patio at rear, boxed in eaves—cost $285.



ARRAY OF TELESCOPES is work of amateur astronomer James Becker, Hollywood, Calif., who used surplus lenses for refractor in center, ground own mirrors for other two.

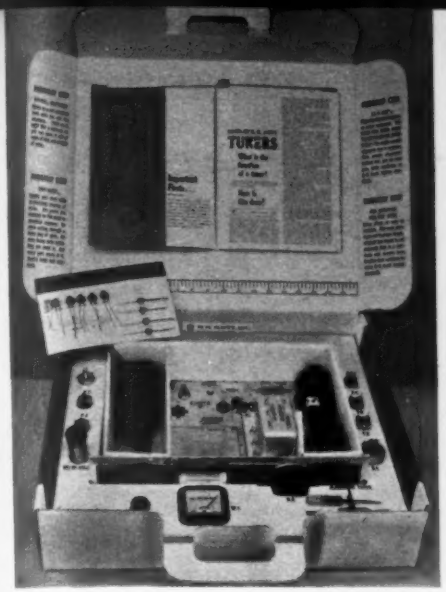
CLASS A KART from MI plans with some modifications to steering, brakes, body, brought success and trophies to its maker C. Vincent Sheehan, of East Hartford, Conn.

Eight Hours to Assemble NEW FM TUNER KIT

Clarity and convenience are the key words in an outstanding kit.

THIS FM tuner was assembled in two evenings and aligned on the third. H. H. Scott, Inc., 111 Powder Hill Rd., Maynard, Mass., make this model LT-10 kit for $89.95. Features include a silver-plated front end and a wide-band detector. Extended frequency response and distortion-free performance put it in a class of its own. The front end consists of an RF amplifier, a local oscillator and a mixer. The silver plating of the front end and its components cuts circuit losses to a minimum and

METER on front of completed tuner shows the relative strength of incoming signals.



LAYOUT OF KIT is planned so that box containing it becomes compact working area.

INSTRUCTIONS attached to case top are easily read leaving hands free for work.

provides maximum gain. Reduced cross modulation is another result of the care which has gone into the design of the front end, which is completely shielded, conforming with FCC regulations concerning interference.

Part-charts are provided with capacitors, resistors, and pre-cut wires. Items on the cards are mounted in the order in which they will be used. All diagrams are full size and components are shown in color. The leads (connecting wires) of the various components may be cut and shaped by placing the part on the drawing. Tools required are basic: a regular size screwdriver, long

PART-CHARTS containing components have same number as relevant page of handbook.

PLATFORM is specially designed to hold chassis in fixed position during assembly.

SELF-CONTAINED work area can be easily closed and stored if work is interrupted.

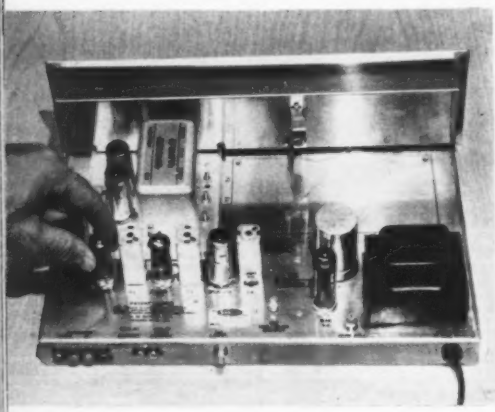
METER is attached to chassis upper side nearly completing mechanical assembly.

nose pliers, wire cutter and soldering iron or gun. Ample solder, a small screwdriver and plastic alignment tool are provided with the kit.

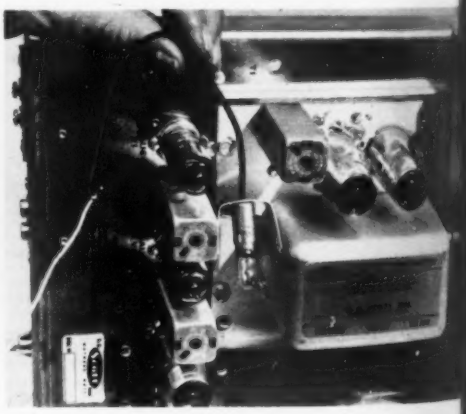
Start with the mechanical assembly following instructions to the letter. Read each step through before carrying it out and when completed check it off in the box provided in the instructions. When a few steps have been completed check back for possible omissions or errors.

Pots (potentiometers) and IF (intermediate frequency) cans are held in place on the chassis by spring clips. The alignment holes at the bottom of the IF cans should be covered temporarily with tape to prevent small pieces of wire from falling in, as this could result in a disastrous short.

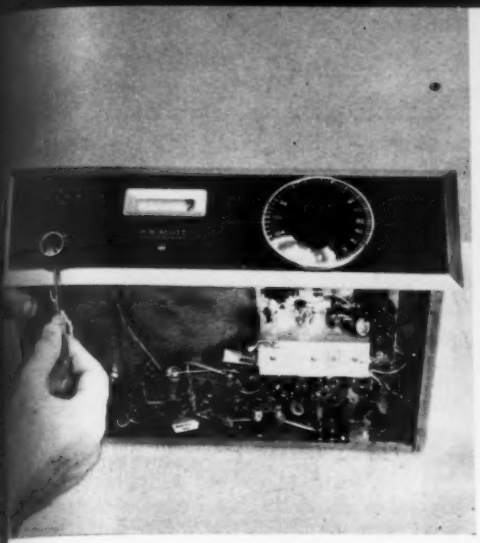
Electrical assembly is the next stage. For really fine performance all leads must be as short as possible. To get an idea how the finished result should look, inspect the pre-assembled front end.



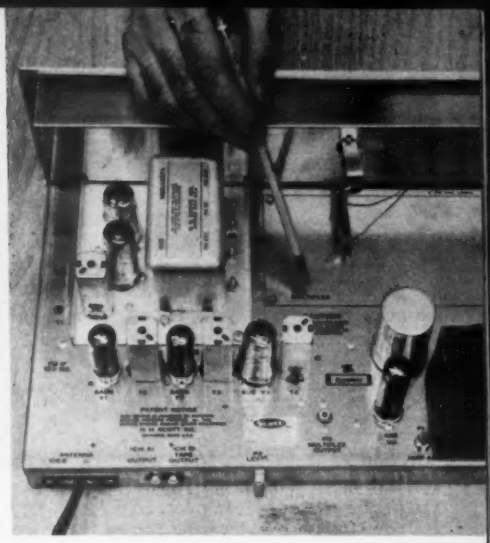
TUBES are inserted into proper sockets and the tuner is now ready for alignment.



PILOT LIGHT is used in clever method of alignment eliminating lab equipment.



CONTROL KNOBS are installed. The pilot light has been fixed to illuminate dial.



SUFFICIENT SPACE has been left for a multiplex adaptor for stereo broadcasts.

Note how leads are trimmed and how components are positioned close to the chassis. If the plans are followed carefully there should be little need for insulating bare wires. However, in cases where there seems to be even the slightest possibility of a short occurring, spaghetti (insulating tubing) provided in the kit should be used.

It is most important that joints are soldered correctly. The iron should be well-tinned, the wires to be joined absolutely clean. Wires should be held in position by a twist round the contact at each end before solder is applied. The iron is used to heat the joint. When the joint is hot enough it will then melt the solder. Care must be taken with components such as diodes and resistors as they can be damaged by excessive heat. One way of dissipating heat is to grasp the lead between joint and component with pliers. Practice shots at soldering are recommended if this is your first attempt.

When the electrical assembly is completed you may have a strong urge to plug in the set and see what happens. This could be costly as there may be an overlooked error which could cause considerable damage. It is better to restrain yourself until a complete check has been made. This is simplified by a check sheet on which each pin and terminal is marked with a series of numbers next to it. The number indicates the amount of wires and leads that have been soldered to that pin. With the help of a friend the whole check up should take about ten minutes.

When you are sure everything is in order proceed with the final assembly, mounting the lamps, control shield, front panel and tubes. Then plug in the set and turn on the power. Tubes and bulbs should light up and the meter should show some sign of life although the reading will probably be low. Turn the tuning dial full circle. Each time a station is tuned-in the meter will jump to a higher rating. The stronger the signal the greater the meter deflection.

The alignment of the tuner is accomplished by using a unique method developed by the manufacturers. Known as EZ-A-Line, it eliminates the necessity for laboratory test equipment. The required materials, alignment tool, FM dipole antenna, audio cable, 10K resistor and pilot light, are provided with the kit. The resistor is for those who live in a strong signal area. It is connected to the 300-ohm terminal to artificially weaken the signal. The light bulb is used for aligning the detector. When this step has been completed the bulb is permanently attached to the chassis to illuminate the tuning dial.—*R. J. Capotosto*

Drapery Hardware

[*Continued from page* 127]

terial from the roller. Special fabrics can then be stapled to the roller. Make sure that the over-all diameter of the shade, when the material is wound up does not exceed the clearance allowed by the mounting hardware attached to the outer window frame. If you do want to use a heavier material with more bulk, you had better screw the mounting brackets to a piece of wood which will offset them for the window frame by the required distance.

Recently there has been a fad for using thin sheets of laminated plastics with various decorative objects pressed in between the two layers. Butterfly wings, flowers, leaves and lengths of grass are common. These plastic screens can either be mounted on a frame which is in turn attached to the window frame or can be tacked right up over the window frame. Prices for these plastic, decorative materials run about 90 cents a square foot. From Japan we also have Shoji shutters. These use the same kind of laminated plastics just mentioned but have the plastic sheets mounted in conventional shutter frames.

Regular shutters can also be used to good effect. The louvered type, with a rod which you push up or down to open and close the slats, costs about $1.50 for a 20x9 section or about six bucks per complete window. Louvered shutters can, of course, be mounted either inside or outside the window. When mounting shutters on the outside, use hooks to secure the shutters either open or closed to prevent wind damage.

Mounting hardware for the different types of window coverings is simplicity itself. The only tools needed for about nine-tenths of the situations you'll ever encounter are a hammer, screwdriver and a drill.

Mounting curtain rod brackets is simply a matter of tapping the nails supplied with the rods into the window frame. Traverse rods for drapes should be mounted with screws. About the only rule to observe when attaching hardware to window frames is not to drive screws into miter joints. Reposition brackets if necessary.

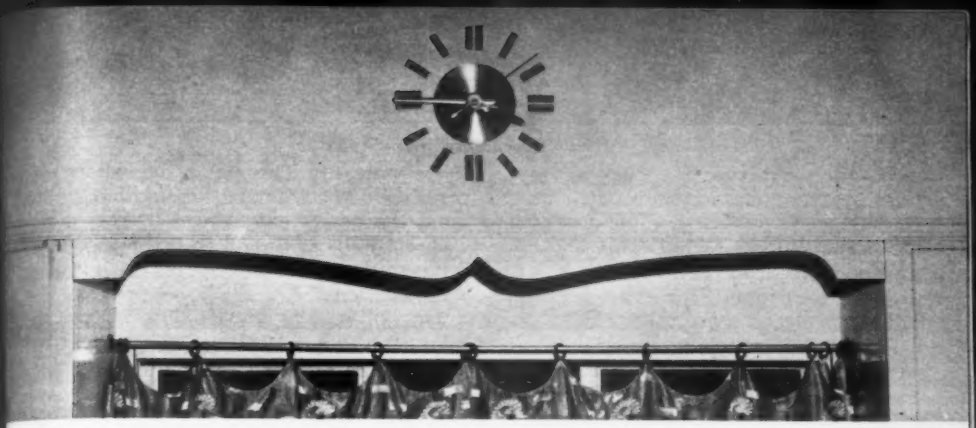
Many times you may want to mount traverse or curtain rods a foot or more away from the window frame or above it. If the walls of your home are plaster, toggle bolts or Molly bolts are the thing to use. Regular screws are useless in plaster or wallboard. With masonry walls use plastic or lead shields. Screws are inserted in these shields after the shield is driven into a pilot hole drilled in the masonry. When rods are mounted on the ceiling always use toggle or Molly bolts unless the ceiling is wood.

If you want to extend a traverse rod beyond or above the outer edge of the window casement to gain the impression of extra width or height you can do it without drilling holes in the wall by means of frame extenders. These are L irons with a number of holes drilled in each end. All you have to do is screw one end to the casement and mount the traverse rod bracket on the other end. Another way of doing this is to get special brackets for your rods. These allow the rod to be supported from the window casement but with its ends at some distance from the outside edge of the casement. These brackets don't get in the way of the movement of the drapery because they are designed to support the rod from the top. Center supports for holding extra long rods up in the middle are designed in the same way.

When you get around to selecting a fabric for your drapes or curtains, give a little thought to what you want the drape or curtain to accomplish functionally and let your wife worry about the decorative aspects. She probably won't let you get a word in edgewise anyway. A word of advice from Cohn-Hall-Marx, one of the nation's largest fabric house: Always remember to consider the pattern of the drapes when open as well as when fully closed. Also bear in mind that the pattern and color of your drapes should be pleasing with daylight coming through them as well as by reflected incandescent light.

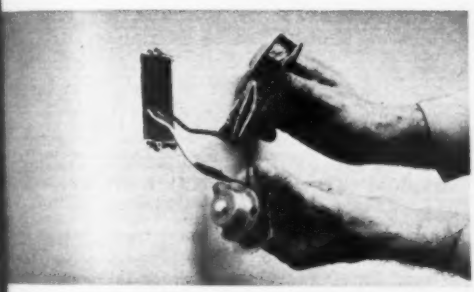
In kitchens, curtains should be of a fireproof material as should drapes or curtains near a fire place. Fiberglas is highly recommended. Noise can be blocked best

[*Continued on page* 150]

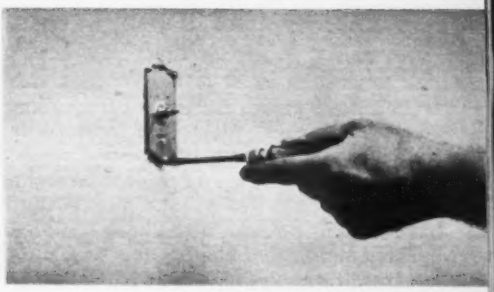


Except for hands and numbers, movement of clock is completely recessed within wall.*

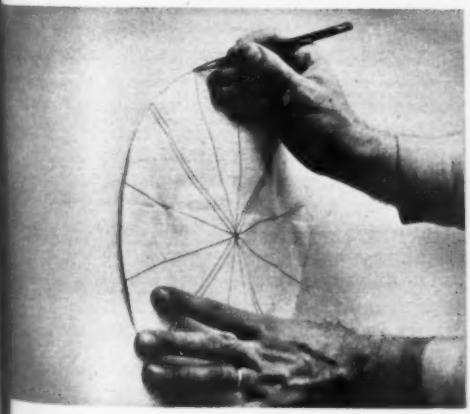
IN-THE-WALL CLOCK



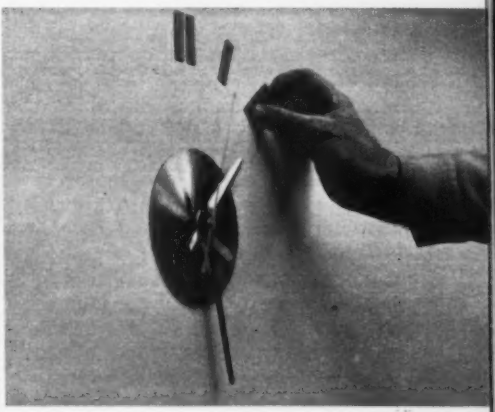
1. Disconnect power. Make splices with solder and tape to lines in outlet box.



2. Small motor fits neatly within outlet box. Cover plate is screwed in place.



3. Next step is to mark the position of "numbers" with aid of template supplied.



4. Install central plate and hands. Final step is to mount the self-sticking numbers.

*Wisconsin Clock Co., Milwaukee 4, Wis.

Washing Machines

[*Continued from page* 105]

clothes to drop back into the washing solution rather than adhere to the sides by centrifugal force. The peeling away from the basket provides the flexing and abrasion and the drop back into the solution provides the impact. These have been carefully designed to prevent the clothes from balling up in a tangle in which the center pieces would not be exposed to the action.

All modern automatics make use of centrifugal force (the outward force caused by the spinning of the basket) to extract wash and rinse water from the clothes. In some, the addition of a heater, blower for air circulation, lint trap or condensing wall and separate timer makes the washer-dryer combination, the dryer being operated either by gas or electricity.

An over-all look at today's machines shows an almost uniform working height of 36 inches, though the back panels may rise to as high as 46 inches. Widths vary from 25 to 29 inches and depths from about 25 to 28 inches. Most are top-loading, though Westinghouse and a few others make front-loading machines. Weights vary from 231 to 315 lbs. and all machines have leveling devices, usually legs that can be fixed at different heights with lock nuts.

All major makes offer water level selection for different wash loads. The maximum water consumption ranges from 30 to 44 gallons per load and the load capacities range from eight to ten lbs. All have regular washing cycles and short cycles for fine fabrics. Most also have additional cycles.

Separate speeds for wash and spin are found in all vertical-axis machines and these speeds can be varied independently in a number of makes to accommodate the different types of fabrics. Most makes have cold, warm and hot wash temperature settings as well as settings for cold and warm rinses, with Maytag also offering a hot rinse. In several cases, a pre-wash or soak feature is included and where automatic bleach dispensers are incorporated, they're generally timed to release the bleach a few minutes before the end of the wash.

It's just about standard for washers to have a full year's warranty on all parts except the transmission, which carries a five-year warranty. This means the factory will replace defective parts during that period and the dealer can inform the buyer for what length of time free labor goes with the purchase. Frequently, it's the length of the warranty.

Installation of a washer isn't complex but it's best done by an authorized service agent. The machine can be installed any place in the house where plumbing and electrical connections are available. The hot and cold water connections should both have shut-off valves and the hot water should come in at about 140° F in a quantity of about 40 gallons per hour and a half if the machine is to be in continuous operation. Water pressure requirements vary but 20 lbs. per square inch is about minimum. A drain of at least 1¼-inch inside diameter should also be available nearby. The floor below must be firm without variations of more than an inch or so between points on which the four legs rest.

Almost all washers require 60-cycle, 115-volt AC electrical connections. An individual two-wire branch circuit with either a 15- or 20-amp circuit breaker is desirable. Many manufacturers recommend that the power line be plugged into a three-prong receptacle, though a three-wire ground adapter may be used. *In any case, the machine should be grounded.*

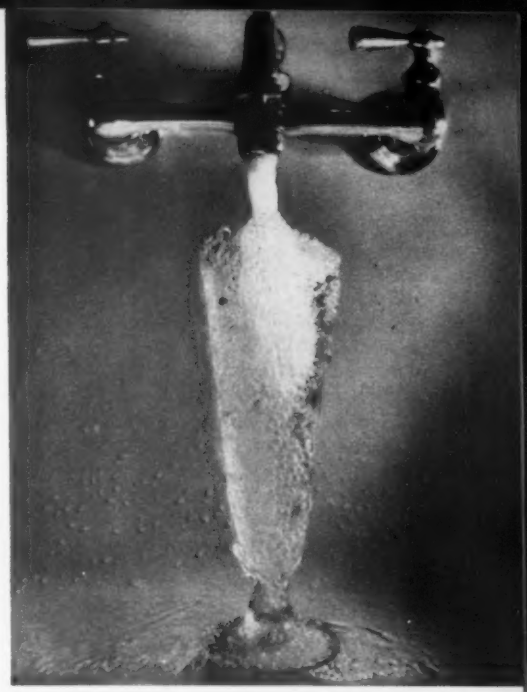
Because of the complexity of these machines, a certain amount of service is necessary. However, unless you are familiar with solenoids, thermostats, humidistats, relays, timers or straight mechanical elements, it's best to leave the servicing to the experts.

A sure way to eliminate many service calls is to follow instructions in the care and use booklet supplied by every manufacturer. Overloading and unbalanced loading are the main sources of trouble. Manufacturers supply guides to the average weights of ordinary wash items and they should be followed. Also, clothes should not be packed in too tightly, regardless of weight.

There are several simple checks any housewife can make before calling for service: [*Continued on page* 150]

clear, clean water

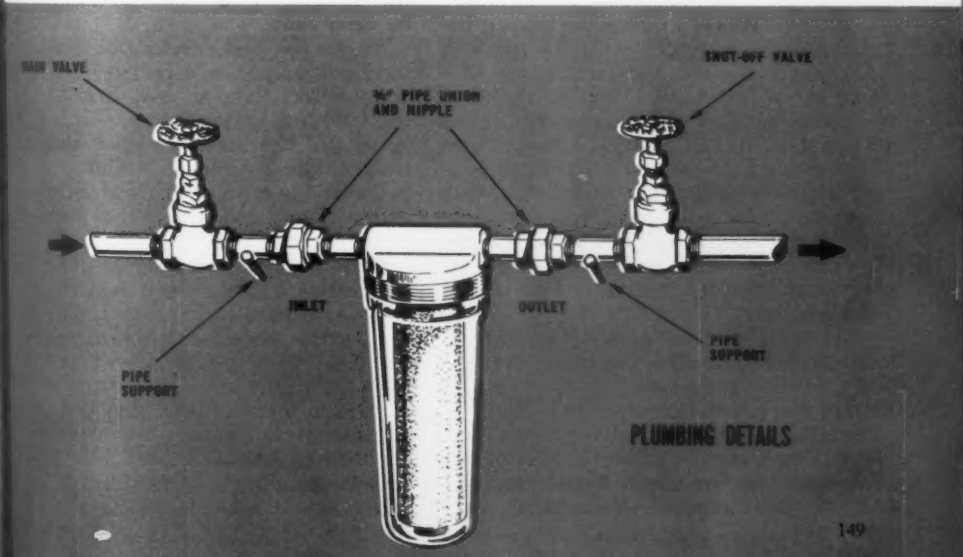
Install a filter to trap the impurities in your water supply.



YOU'D be amazed at what flows from your faucets besides water. Even if the water looks very clear, installing a filter in the main line will prove that there's room for improvement.

We put an Aqua-Pure water filter in our water supply. Made by The Cuno Engineering Corp., Meriden, Conn., it has inexpensive and easy-to-change filter cartridges. After one week, a snowy white cartridge was black with impurities.

The filter housing is molded plastic, designed to withstand pressures up to 125 lbs. per sq. in. at temperatures up to 100°F. The filter is contained in a clear plastic sump so that it need not be removed for inspection. Normally, a filter cartridge must be disposed of when it has become too clogged—a condition indicated by a drop in water pressure. However, some areas have an excess of algae which [*Continued on page* 152]



PLUMBING DETAILS

Drapery Hardware

[*Continued from page* 146]

by heavy fabrics. Anything that goes on the windows of a child's room should naturally be washable at home since kids will be kids in spite of their parents' warnings.

Where price is a real problem and a fancy fabric isn't a must, don't forget burlap. It's available in a number of bright colors and widths and has a pleasing way of breaking up incoming sunlight.

A word about color. Don't just pick a fabric because you like it's color. Remember that it is going to hang in a room that has colors of its own and therefore your drape or curtain will have to match. There's a very clever color wheel you can get through dealers of Kirsch drapery hardware. This thing will show you 84 color combination possibilities!

Since you can't return drapery materials after they have been cut for you, a sensible way is to take the colors of your room *with* you when you go shopping. A simple way to do this is to pick up a few color sample books from local paint stores and to find the colors which come closest to those in the room you want the drapes. Or you can buy the smallest piece of material the store will sell and take it home and see how it looks. Sometimes department stores and drapery shops will loan you color swatches. Ask for them by all means.

When it comes to actually buying the material, be generous with the amount. Allow at least *twice* the width of the window for a full window width drape, or twice the width of the area you are draping if less than the full window. Allow at least 2½ times window width if you are selecting a lightweight sheer material. Make your vertical measurement from the height where you plan to attach the traverse rod to either the floor, window apron or sill; then add about ten inches for hems at top and bottom.

In conclusion, we want to extend our thanks to the following companies for their help in the preparation of this article: Baker Furniture Co., The Shaw Mfg. Co., The Henridon Schoonbeck Co., Cohn-Hall-Marx Co., Kirsch Mfg. Co., Owens Corning Fiberglas and The Gould-Mersereau Co. •

Washing Machines

[*Continued from page* 148]

If the machine won't start, are the controls properly set in the operating position? Is the power line plugged in? Is a fuse blown?

If it won't fill with water, are the hoses kinked? Is the suds-return switch in the off position?

If water leaks, are the hoses connected? Are the connections tight?

If the machine vibrates, are the leveling legs solid? Is the load properly distributed?

If the water won't drain, is the hose kinked?

From a serviceman's standpoint, the following checklist may apply to a typical make—in this case, Hotpoint:

If the machine won't run, possible troubles are an inoperative timer, a loose lead terminal on the timer, an inoperative motor, an open circuit in the wiring or a disconnected terminal receptacle.

If water doesn't enter, the temperature selector switch may be inoperative, there may be an open circuit in the timer or the wiring harness, the inlet valve solenoid may be open or have a loose lead terminal, the inlet strainer screens may be clogged or the motor centrifugal switch may not be making contact.

If the water does not shut off, contacts may be sticking in the timer, the motor centrifugal switch may be inoperative or the inlet valve plunger may not be sealing the pilot hole in the diaphragm.

If water will not pump from the washer, the drain or pump may be clogged, the drain hose may be kinked, the impeller or pump pulley may be loose on the motor shaft, the motor belt may be loose or there may be a lock caused by air or suds.

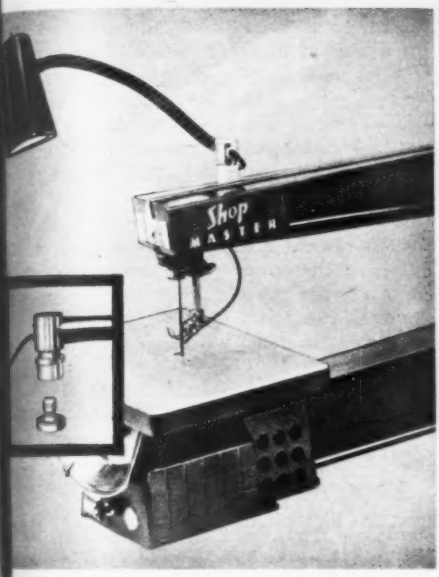
To get the best results from a washing machine, soap should be used only if the water is soft. Even so, soap should only be used with a water softener in both the wash and the rinse. A good softener is Calgon. Don't use soap and detergent together. Suds are a measure of the cleaning action of soap but they do not necessarily indicate the strength of a detergent.

With science producing so many types of fabrics, washing itself becomes a science, and there's no better argument for turning the chore over to a machine geared to do it. Or if you're parents of a newborn baby who will soil upwards of 5,000 diapers in the first year, that alone is reason enough to compare all the features of the modern automatics and make your selection. •

MI's HARDWARE STORE

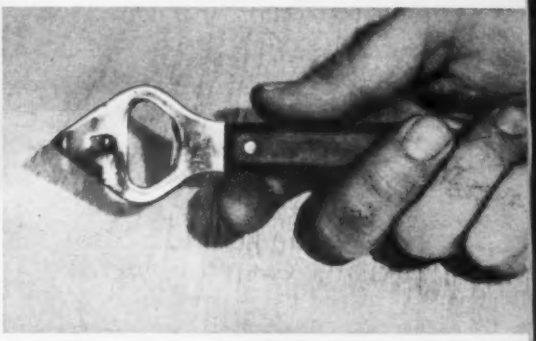
STEEL WOOL DISPENSER package is easy to store, allows user to choose pad size.

James H. Rhodes & Co., 48-02 29th St., Long Island City 1, N. Y.



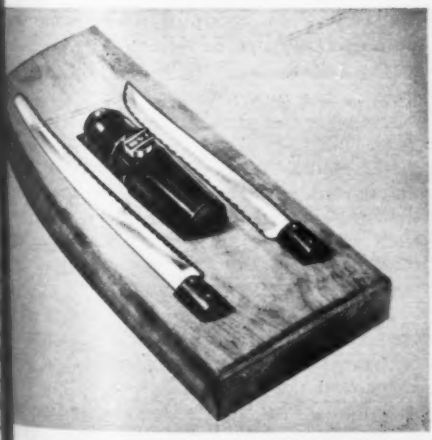
MULTI-LAMP snaps onto small brackets, for mounting on machines, etc.; from $8.95.

Moffat Products, Inc., 3124 Washington Ave. North, Minneapolis, Minn.



STAINLESS STEEL AND CHERRY WOOD make attractive bottle and can opener. $1.49.

Irvin Ware Co., 43-30 38th St., Long Island City 1, N. Y.



ELECTRIC CARVING SET is battery driven. Motor in handle activates blades. $19.95.

Burgess Vibrocrafters, Inc., Grayslake, Ill.

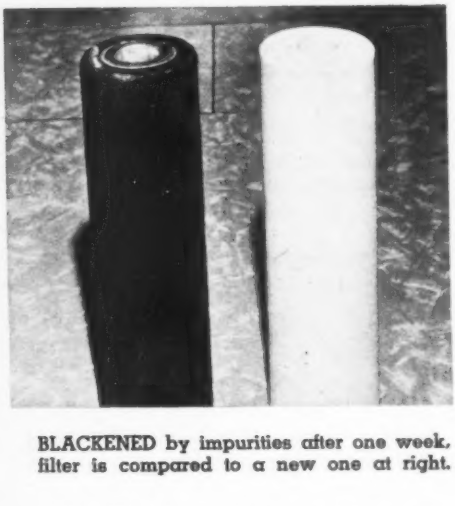
T-BAR TOOL is improved wrecking bar with multi-purpose T-head; from $4.69.

T-Bar Tool Co., Box 385, Rock Rapids, Iowa.

Clear, Clean Water

[*Continued from page* 149]

FILTER is housed in clear plastic pump, doesn't have to be removed for inspection.



BLACKENED by impurities after one week, filter is compared to a new one at right.

will collect on surface and this can be scraped off to give new life to the filter.

A typical installation is shown in the drawing and complete instructions are supplied with the filter. Anyone with the slightest plumbing experience will find it an easy job and the reward of clear, clean water is worth it. •

Modernize Enlarger

[*Continued from page* 118]

heavy staples at each side of the rack.

The counterbalance is the heart of the device for easy operation. First weigh your enlarger and the dolly, then prepare an equal weight of wet sand and gravel. Build a wooden box to hold this amount and then mix the small amount of cement in a bucket or large can. Before pouring the cement, place two sections of two-inch gutter pipe in the form; these will later allow you to add sand so that the weight will be right on the button. A bolt is embedded in the top for fastening the counterweight cable, which is stranded steel picture hanging wire.

The holes for the spur gear shaft in the sides of the column are the most critical of the entire project. They must be drilled so that the shaft carries the shouldered spur gear in mesh with a gear rack. In the case shown, ⅝-inch holes were drilled in the column and half-inch bronze bushings were forced in to take the half-inch shaft. A setscrew in the collar of the spur gear fastens it to the shaft.

The crank may be any available to you. A can opener crank would do or one can be made from flat iron, dowel and a bolt. On the handle end of the shaft, place a half-inch shaft collar. With the collar inside the 2x4 upright and the crank outside, the shaft will remain centered. All parts mentioned may be found in one of the large chain stores except the rack and spur gear; these can be found in a junk yard or in larger hardware outlets.

The baseboard from the old enlarger is used in the new setup. Wooden arms are fastened to the underside as indicated and barrel bolts are used to attach the assembly to the column at a convenient height. The dowel and rod arrangement shown in the drawing hold the baseboard horizontal and the turnbuckle is used as a means to make it exactly level. For extreme enlargements, the baseboard pivots down.

The new arrangement gives you an enlarger with all the commercially available features, mainly touch control and the scope to make extra-large prints. You can spend all your time enlarging instead of wasting a good deal of it with clumsy mechanical adjustments. •

Fizz Boat

[*Continued from page* 107]

bulkhead B-4 (the transom) to the keel and to each hull side. Check the assembly now to see that proper alignment has been maintained.

Once again permit the cement to dry thoroughly before proceeding. During this time you can shape the boat's hard balsa stem. When completed, butt it against the forward section of the keel and cement the forward ends of the two hull sides to it. Use pins to hold this assembly together while drying.

The hull bottom consists of two pieces shaped as shown in the drawing. When attaching these cement them to all bulkheads, to the stem and keel, and to their respective hull sides.

The top forward deck is cut from $\frac{1}{16}$-inch medium sheet balsa. It is best to dope or steam-in the curvature before cementing this piece in place. Now cut the remainder of the deck to shape—two side pieces and the stern section—and cement these in place.

The cabin sides are cut from $\frac{1}{16}$-inch hard sheet balsa and cemented to the forward deck and to the inside of the side decks. Shape the two cabin bulkheads (C-1) and cement them to the interior of the cabin sides.

The cabin top is of $\frac{1}{16}$-inch sheet balsa which is precurved before assembly to simplify the job. Now cut the windshield frame section and cement it in place.

Complete the basic boat assembly by fashioning the skeg and rudder from hard ⅛-inch sheet balsa and cementing them in position on the hull bottom.

Operation. The assurance of optimum performance from the engine depends on a proper mixing of the water and the Fizrin or Alka-Seltzer which creates the chemical reaction that jet-powers the boat.

Drill a small hole in the cap of the plastic-bottle engine for the tubing to pass through. Make this as tight a fit as possible so that little or no gas can escape.

The bottle we used powered the boat for 30 to 40 seconds at a speed comparable to that achieved by a small electric motor. We set the exhaust tube in a variety of positions and found that a horizontal setting just below the water proved best. •

Golden Hammer Awards

[*Continued from page* 140]

N. Y. . . S. L. Hammett, Hornchurch, Essex, England. . . Marshall Long, Birmingham, Ala. . . Arthur E. Ashton, Ludlow, Mass. . . Robert J. Pluckebaum, Louisville, Ky. . . V. Lotter, Ceres, Cape Prov., S. A. . . Morris E. Forbes, Lakewood, N. Y. . . Richard B. Mercer, Valdosta, Ga. . . Harvey Daniel Morton, Philadelphia, Pa. . . . Homer Riggs, Klamath, Calif. . . John D. Robinson, St. Paul, Minn. . . Darrell Spencer, Raleigh, N. C. . . Carl D. Sutton, China Grove, N. C. . . Harry Rammler, Whitby, Ontario, Can. . . Jose Pena Mariano, Manila, Philippines. . . Arthur F. Adams, Jr., Beverly, Mass. . . G. P. Turner, Jr., Smyrna, Ga. . . F. H. Bakewell, Toronto, Ontario, Can. . . Albert Resch, Akron, Ohio. . . John G. Ianni, Hamtramck, Mich. . . Leo P. Hycz, Seattle, Wash. . . Robert B. Boston, Norfolk, Va. . . Cecil F. Jones, Alton, Ill. . . Henry Diener, Stowe, Pa. . . Edward H. Reilly, Quebec, Can. . . Jack B. Weaver, High Point, N. C. . . Fred R. Taylor, Roseville, Ill. . . Neal Bowden, Lincolnton, N. C. . . Donald F. Herbert, Midland, Mich. . . Edwin Winter, Lansing, Mich. . . Joseph P. Tylutiki, Amsterdam, N. Y. . . Albert Fortunato, Hanover, N. J. . . John E. Ellingsin, Sr. & John E. Ellingsin, Jr., Glen Burnie, Md. . . Douglas Yates, Fresno, Calif. . . James J. Panchot, Ashland, Ky. . . H. Bruce Bending, Mayfield Village, Ohio. . . Paul Snider, Coeur d' Alene, Idaho. . . Joseph Charles Lapira, Malta, G. C. . . Eugene R. Collins, S/Sgt. USAF, Santa Maria, Calif. . . James W. Bays, Garland, Tex. . . Ross E. Diell, Pasadena, Calif.

The following craftsmen have been awarded CERTIFICATES OF MERIT for their projects:

Mrs. Arlene Cimini, Reynoldsburg, Ohio. . . Anthony J. Lisy, Jr., Joliet, Ill. . . Jack L. Shagena, Jr., Towson, Md. . . Francis M. Haire, Worcester, Mass. . . Charles C. Winberg, Portland 23, Ore. . . John E. Pearson, Teddington, Middlesex, England. . . Clarence Ramme, Rich, Calif. . . Maurice Lahau, Quebec, Can. . . Paul Cole, Glendale, Calif. . . Fred Rundell, Galion, Ohio. . . F. A. W. Deal, Shepperton, Mddx, England. . . Witold Monkiewicz, Astoria, Ore. . . Carl A. Stamler, Freeport, Ill. . . C. N. Critcher, Mt. Clemens, Mich. . . Dr. Howard C. Reece, Silver Spring, Md. . . Eugene Hayes, Mingo Junction, Ohio.

Look for names of more winners next month.

Shoji Wall

[*Continued from page* 135]

stock available at any lumber yard. Some of the strips must be ripped down, as three different widths are used. A full 1¼-inch width goes along ceiling and floor, a one-inch width is for panel separations, and a quarter-inch width is used for the horizontal lines.

Attach the strips to the wall with glue and thin, headless brads. Cover the inside corners first, then the vertical panel separators, and finally the horizontal strips, each one cut and fitted to size. •

NOW SEE THIS!

CITROEN CONVERTIBLE by Chapron, internationally famous auto stylist, is a new departure for Citroen but in keeping with the company's neo-classical styling policy. Leather upholstery, wide choice of colors lower resistance to U.S. tag of $4,000, as do automatic jacks, air-oil suspension, front-wheel drive, disc brakes. It should hit these shores early in 1961.

FILM PROCESSING in this new movie camera can be done without any free liquids, pumps, seals or precision metering applicators. Essentially the process presses exposed film against a saturated paper web containing photochemicals; the web loses its liquid and the emulsion accepts it. There is no dripping. Film is developed immediately and can be projected on a screen in less than 60 seconds after shooting. Made by Rapromatic, Inc., Syosset, N. Y.

Chevy's Greenbrier

[*Continued from page* 84]

Actually, you have a total of 175 cubic feet of space—which means you can take along your polo ponies, 21 prostrate Chinamen or a medium-sized redwood tree. The trick is accomplished on a chassis which has only 95 inches of wheelbase as against the standard Corvair's 108″. Furthermore, the Greenbrier's overall length of 179 inches means it is a fleafoot *smaller* than the Corvair sedan! It is 70 inches wide, making it eight inches narrower than a standard Chevy station wagon; despite this, it has almost double the wagon's interior room from any angle—up, down or across.

Where the Chevy Greenbrier and VW Kombi separate the widest is in price. The Greenbrier, in fairly stripped form, costs roughly $800 more than the VW Kombi. But as one automobile man pointed out to me, thousands of people no longer care much about price, so long as the monthly payments aren't raised too far. (As you and I know, this is an economically-suicidal attitude but there are just enough pith-heads around to spoil things for the rest of us.)

Back to the Greenbrier. Though this car had never been serviced by the dealer, the most impressive thing I noticed about it when I first drove out on the road was the extreme quiet; no engine roar, no squeaks or rattles. This is like getting a $50 bill in change from a five-spot in today's American car market. The front seats are amazingly comfortable and if I were given an assignment to drive one of these rigs coast-to-coast and back, I don't feel it would be any hardship at all. The ride is every bit as good as the standard Chevy sedan's. On this point it has the VW shaded pretty thoroughly. Three hundred miles in a day in the VW Kombi and you feel that your vertabrae have been given a valve grind, as the slightest pebble is telegraphed right up to your posterior. This is not so in the Greenbrier.

On the road it had a good head of steam, cruised easily at 60 mph and had a top speed of just over 75 mph. At this point I should point out that although the Greenbrier is basically a Corvair with a bus-type body, it differs considerably in many

dimensions, aside from the basic ones such as wheelbase, etc. The heavy-duty, swing-type rear axle is much the same as on the regular Corvair but is of much heavier construction. The wheel size is 14 inches as against the regular Corvair's 13. The brake drums are 11 inches in diameter versus Corvair's nine inches. In other words, this is a heavier, more ruggedly-built machine all the way around. It weighs approximately 550 pounds more than the four-door Corvair sedan, at just a nose tweak over 3,000 pounds.

Our test job had a three-speed manual shift. There is also a four-speed manual transmission available, as well as Powerglide. The manual shifting setup leaves quite a bit to be desired and if you have long, gorilla-like arms it will be a lot easier to get it into second gear. It seems to me that before many moons or models, the long throw needed to get this barouche into gear will be shortened up so the driver won't look as if he's bobbing for apples when in traffic. Another weak spot is the rear visibility. It is pretty scanty, as your mirror is forced to sight between the two hole-like windows in the rear doors.

Back to the goodies. The seats have an adjustment for rake and the rear seats can be turned around (in case you're mad at your passengers). Wing nuts are used for anchoring them to the floor. The body-frame is of unitized construction (which undoubtedly accounts for some of the silence) and the steering ratio is 23:1, which is rather fast for a vehicle of this type. The wiper blades sweep two-thirds of the windshield area, which is a good feature, and they are electric. The front and side visibility are excellent. The Greenbrier can be ordered with either six or eight doors. On our test job only the driver's door opened on the left side. But if you want to, you can order a Greenbrier with enough doors to empty a saloon in three seconds on a Saturday night.

We first took the car to the beach where I tried a traction test in soft sand near the dunes. In this department, though the traction was pretty good, it is far from being a Land Rover or Jeep. I said to Jim at the time, "If this came with four-wheel drive, it would be a helluva hunting car with its nine-inch clearance for backwoods use. I, for one, might be a buyer, despite the fact that I own a Land Rover and a Jeep."

From the beach, we drove to the Daytona International Speedway where we made some performance runs which were pretty astounding, all things considered. Zero to 60 mph averaged, on a corrected speedometer, 23.1 seconds and 0-30 mph averaged 5.7 seconds, time after time. Now this won't put you into the first 30 rows in a Grand Prix hassle. But on the other hand, acceleration like this means that you won't be blocking too much traffic when the light turns green. The Greenbrier takes a little while to get to top speed, which is just over 75 mph, but when you back it off from there, it cruises comfortably at 60 and even 65 mph.

The rear-axle ratio in our test job was 3.89:1, which seemed to be just about right. With Powerglide the ratio is 3.27:1, the same used with the four-speed manual box. I somehow doubt (though I didn't have the other models to prove it) that the performance would be as good with the four-speed box and the 3.27:1 rear. The little 145-cubic-inch engine doesn't, in my opinion, have enough moxie to push this van at better than 75 mph with the 3.27. Naturally, I could be wrong but I doubt it. I didn't have the car long enough on this test or in the run I made in Michigan, months before, to get any reliable gas consumption figures.

For the benefit of the few of you who've not only been in stir but in solitary for the past few years, the power plant of the Greenbrier is an air-cooled, six-cylinder pancake, rear-mounted mill that was introduced in the standard Corvair in the 1960 model.

In summing up, I'm frankly sorry I didn't get a chance to put this vehicle over the road with a heavy cargo for hundreds of miles, as I had intended to. This would have settled some questions I am still unable to answer, such as: How does the Greenbrier handle with a real load? What conditions? And how does it stand up mechanically under a stiff beating of more than 1,000 miles?

As it is, my impression of the Greenbrier is excellent. From what I could learn in the time I had the test car, it is extremely comfortable, as quiet as a church at two a.m., and it handles well. I bent it around

[*Continued on next page*]

some real hard turns on the sports car course at the Daytona Speedway and though cars of this type have a bad reputation for easily flipping when pushed, at no time did I get that "upsy-daisy" feeling. (But you can bet your grandma's bustle I didn't whip around those corners as hard as I would have in a regular sedan.) In summing up the summing-up, I think the Greenbrier will prove to be a sensation, one of the most-needed vehicles to be put on the American market in years. If nothing else, it certainly is a Den Mother's Dream come true. •

Lincoln Continental

[*Continued from page* 88]

in the first place. I have one test car in my yard as this is being written which has close to $2,500 worth of accessories. Without them, the car would be as bare as a featherless peacock. Lincoln, in its approach to the market for '61, stands above such shyster practice. The list of *standard* equipment is quite astounding, by today's methods. For example, Twin Range Turbo Drive—if you have an automatic transmission car the chances are you paid better than $100 *extra* for that item. Also, the chances are you paid extra for the following (if you have them) which are standard on the Lincoln: power steering, power brakes, power windows, power door locks, dual heater and defroster, dual exhausts, electric windshield washer, whitewall tires, radio (with dual speakers) and undercoating. These items alone, if put on the car in the usual way as optionals, would amount to a healthy sum, as you undoubtedly realize.

Though the car appears to be long, low and sleek, it is actually 14 inches shorter overall than the 1960 Lincoln bulldozer. One item which would catch your eye immediately is that the steering wheel is extremely small by today's standards—in fact, about the size of the wheel on the old Silver Ghost Rolls-Royce. This small wheel feels neat in your hand and is easy to control, but its smallness performs another more important function: if it were any bigger you couldn't get behind it if you weighed an ounce more than 102 pounds. This car would be even better if it had a telescoping steering wheel, such as used on the early model Thunderbirds.

By now you've probably gathered that I think the Lincoln is a pretty chic bucket for local bank presidents, successful bookmakers and members of the Senate. It falls apart, however, as a long distance (meaning coast-to-coast) traveling car for more than two people, and here's why: Around town and for trips to the shore on weekends it has loads of legroom and comfort for the passengers but its cargo capacity is small compact car size. The trunk is strictly weekend space and is actually quite a bit smaller than the trunk on the Pontiac Tempest, if you want a for-instance. The man and wife who head for Florida for a month or two in the winter will have quite a chore getting all their luggage aboard. This will undoubtedly affect some sales and the only solution that jumps to mind is that the Lincoln boys had better hurry up and design a good-looking optional roof rack, or possibly a rear-deck rack, for carrying the stuff people like to carry on long trips.

Now to our test. As usual when I test a car in Florida, I headed for the beach at Daytona for some handling trials and spins. I found the roadability excellent and the handling qualities, even in tight turns and spins, many notches above average. Lincoln learned how to build good road cars way back in the early '50s when they seriously entered competition and walked off with the Mexican road race for several years. The Lincolns of 1953 were the finest road cars of their day in sedan form. I know because I owned a Mexican Lincoln which was written up on these pages several times. These were high-quality, comfortable, big race cars in sedan form and their performance was not only outstanding for their day but better than that of today's Lincolns by many notches. (It should be borne in mind that my '53 Mexican Lincoln could break under ten seconds for 0-60 mph.)

It is quite obvious that with the 1961 model the Lincoln boys were out to build a truly lush balloon for executives not too interested in record-breaking performance. The engine (which is an inch and a half bigger than Madison Square Garden) displaces 430 cubic inches and should have enough power to launch a moon rocket. But the advertised horsepower is 300 and

[*Continued on page* 158]

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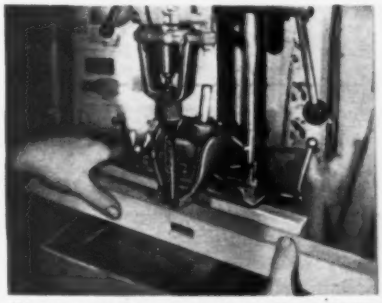

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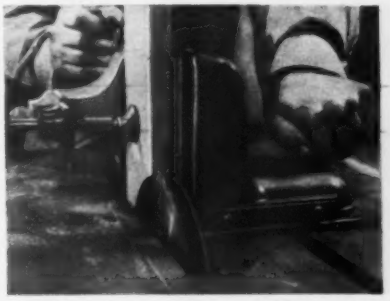

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Lincoln Continental

[*Continued from page* 156]

the advertised torque is 465. The car moves out nicely but not sensationally.

For my real performance runs I went to the Daytona International Speedway and tried the car out not only on the high-speed track but over the sports car course as well. Zero to 60 mph averaged for many runs 11.2 seconds; 0-70 mph, 15.4; 40-60, 6.1 seconds. Top speed is 110 mph plus. With a sharp tune-up you could undoubtedly tickle the underside of 120 mph.

The Lincoln boys probably figured this one fairly right. The average man who buys a car such as the Lincoln Continental will find the performance adequate, if not over-stimulating. If he's a performance bug (as so many old gees are) he knows he should buy a Chrysler 300. Actually, quite a few of the more successful men I know have gone over to Lincoln already for 1961, sold on its looks and comfort. Make no mistake about it—these Continentals are truly quality automobiles.

In many ways, this job is very similar to the Continental II which was re-introduced in the mid '50s with a $10,000 price tag. That car, like the Edsel, went into history but a lot of it has been reincarnated for the '61 offering. For example, although the Continental Mark II was slightly larger (with a 126-inch wheelbase versus 123″ for the '61), looks-wise there are many similarities. The overall height of the Mark II was 56 inches—the '61 is two and a half inches lower. The '61 also offers more rear seat legroom, though the headroom was almost two inches greater in the Mark II. The '61 has more interior width and more glass area. Anyway, a close examination of the old Mark II and the current Continental quickly shows they are blood brothers.

Some interesting features in this car include the optional air-conditioning unit which folds down when in use from the center of the instrument panel. Lincoln calls it a Retractable Console with a three-speed fan. Unfortunately, we were experiencing a cold snap during the test, so I can't bring you a report of its efficiency, but it is a very neat deal if it works. There is a side-view mirror right between the

[*Continued on page* 159]

vent window and your elbow which makes tailward observation the easiest I've seen. Another feature is the squared-off back window, a la Thunderbird, which is a great preventative measure against scalp and neck-frying so common in most designs today.

This job, as you can see from the photos, is a four-door pillbox. An interesting feature is that the rear doors open at their forward edge, making getting in and out easier. There is also (as standard equipment) a vacuum-controlled door-locking system which is operated by a toggle switch on the instrument panel. A door lock warning light flashes when any door isn't locked after the ignition is turned on, or when either rear door isn't fully closed. The electric window deal also has another feature worth noting: the driver can *lock* the windows in any position *he* wants them. In other words, if kids are riding in back and the driver wants the windows lowered, say two or three inches, there is a button by his controls that will lock them there. All the tugging in the world on the back door switches won't move the windows until the lock is released. This ought to prove handy in preventing older brats from throwing younger brats out the rear windows. All the windows are curved, which isn't too much of a feature. At no extra cost you can order your Continental with a real walnut instrument panel or in satin-brushed-finish metal.

In summing up, this is one of the plushest wolftraps on the road. It's as quiet as the love life of a bass and it rides as smooth as spilt fudge on a canted stove. Many people have already stated it's the best-looking car on the road and I'm not going to argue with them. Whether the Continental fits your needs or not, at the price it's a good buy. There isn't a deluxier American car on the market. However, if you are an icebox salesman who has to carry samples, that small trunk space may give you trouble. •

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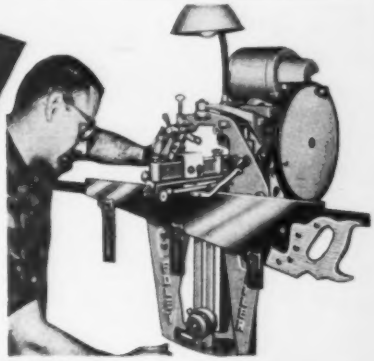

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Shrunken Heads

[*Continued from page* 94]

In six years Sam has shrunk around 15,000 mink heads. Last Christmas season his sales ran over $5,000 and the rapid increase in demand since then indicates he may market as many as 5,000 shrunken heads in 1961. "The product has proven so popular that we've had to respond to a demand from do-it-yourself fans for Shrink-Your-Own-Head Kits," says Sam.

He readily admits stealing his head-shrinking process from the Jivaro Indians of the Upper Amazon Basin, who originated the hobby, but claims to have added some refinements of his own. Through trial and error he developed preformed molds for a wide variety of sizes and facial expressions and he improved on the Jivaro method of heat-shrinking the heads with hot sand by inserting heavy copper resistor wire to conduct heat into the special plaster molds around which the heads are formed.

For custom jobs, Rifkin uses clay molds on which the heads dry for a week or more. During this time they are hand-formed to produce more gruesome, weird, humorous or appealing effects than are possible with plaster molds.

So far, Sam's sales have been limited mostly to Southern California customers but now he's branching out via mail orders. If the boom in shrunken heads keeps booming, he may make a million. If and when he does, he'll be torn between two desires—investing in a mink ranch or going to South America to swap shrunken heads with the Jivaros. Chances are he'll decide on the mink farm; you've *got* to keep your head in that business.—*Bob Willett*

Battlefield Scouts

[*Continued from page* 81]

radically. Future combat groups will be small, well-dispersed and constantly on the move. In between our shifting forces will be large stretches of terrain open to hostile infiltration. These open areas must be kept under constant watch. What is needed is some form of mechanical, 24-hour, ground surveillance.

The Silent Scout is a compact collection of tried and true electronic devices, all of

them "off-the-shelf" items. It can employ a variety of detection systems—radar, infrared, TV—and can be comparatively simple or highly sophisticated. The Scout can be mounted on a remote-controlled, semi-mobile cart, as shown, or can be set in place on a folding tripod.

Set out in a grid of effective observation points, approximately four to five miles apart, a checkerboard of overlapping Scouts can monitor an area completely. Neither man nor vehicle can move without being detected, recorded and reported to distant defense bases. The Silent Scouts can be placed in position by plane, helicopter or surface crew and, under emergency battle conditions, can be delivered by unmanned drone copters or parachutes.

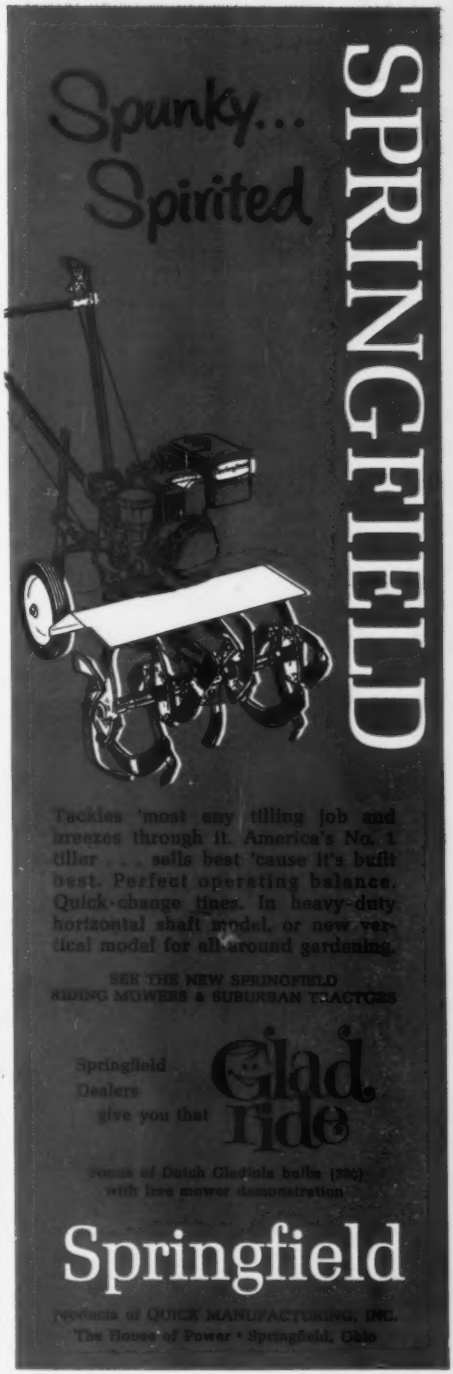
The Scout illustrated is one of the more elaborate ones. This model, assembled around a lightweight frame of dural tubing, is mounted on three Terra-tires for mobility. These low pressure air-bags can be folded for compact transport and in air drops, serve as landing cushions. The two rear tires, fixed on a transverse axle, are sprocket-driven by a geared electric motor. The front tire, mounted on a steerable fork, is turned by a separate motor.

The electronic gear used in this model includes an army Able Type Gyro Compass, hung inside the main frame; a TV pickup fitted with a snooperscope, I-R ray projector and optical rangefinder, all equipped with infrared lenses. Above these are a telemetering radio sender to transmit target images back to base, and a 360-degree infrared "sentry eye." Power to operate this equipment and the running gear, comes from a pair of Marine Corps Fuel Cells, hung like saddle-bags on either side of the frame. With its running gear extended, the Scout measures 46 inches in length, 40 wide and 40 high. Depending upon the equipment used, it weighs between 250 and 300 pounds.

For protection against enemy search patrols, a pair of Sten guns may be mounted on the upper turret. Fitted with traversing and elevating gear, the guns can be aimed via the TV lens and fired by remote control. These guns are light and cheap and could delay the machine's destruction long enough to reveal an important target.

During the initial stage of surveillance,

[*Continued on next page*]



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the machine remains absolutely motionless and quiet. No beams are cast, no radio signals transmitted. The only portion of its equipment that operates is the "sentry eye" and this is what electronic engineers call a "passive catcher." The unit consists of an outward pointing ring of Raytheon heat detectors, each the size of a shotgun shell. Extremely sensitive and with a range measured in miles, these tiny eyes react to "hot spots" caused by internal combustion engines, machinery friction or even the human body.

The moment any such heat source enters the Silent Scout's area, the individual eye pointing in its direction reacts. This actuates a servo-mechanism which swings the turret-mounted TV scope and locks it on the target. The TV immediately goes into action, registering a moving picture of the intruder. Simultaneously, its coupled range-finder computes the distance and the gyro-compass gives the precise bearing.

As the invaders move through the area, a continuous stream of pictures and data flash back to the Scout's control station, cross-checked by observations from overlapping surveillance posts. These are automatically correlated and the moving target's position is spotted on an illuminated electronic map. On a repeater map at a nearby missile battery, the intruder's marching speed, direction and range are instantaneously computed and a target point selected. The waiting missile is programmed and, within seconds, roars into its deadly arc.

Thus, without risk of human life, MI's Silent Scout patrols the great open spaces of tomorrow's battlefields. Together with its airborne sister, the surveillance drone, it supplies our commanders with the tactical intelligence necessary to win the wars to protect the world's freedom. •

Improve Your Shooting

[*Continued from page* 90]

gun that might cost anywhere from $300 to over $1,000. All you need pay for a dandy new upland field gun is between $79.50 and $150.00. A used gun can be bought for half the price of a new one.

Whether you buy a used or a new gun,

the important thing is fit. The main points of correct gun fit are: weight, balance, stock length, drop at heel and comb, thickness of stock at comb, pitch of barrels and trigger pull. Standard guns in most stores today are made to fit a shooter of average build. It requires only a slight change in stock length to adjust a new gun to your own requirements. Should the stock prove too long for you to reach the trigger without stretching your trigger finger or get the gun to your shoulder without catching in your clothes, you'll need a rather delicate job of shortening and should let an expert do it. If the stock is too short you can add a recoil pad or plastic shimmies to the butt plate yourself.

The skeet field has two trap houses, one high and the other low. Targets fly from each house at the shooter's command and follow a definite course. The shooter gains practice at different angles by changing his position every time he shoots. For example, he shoots a pair of singles from Station One. The first single comes from the high house and a second from the low house. Then he moves to Station Two and shoots a second pair of singles and so on to Station Eight. There the targets come speeding almost directly at him and almost over his head, giving him fine practice for waterfowl shooting. The two shots from this station often fluster beginners, but actually they are among the easiest to master.

Skeet mixes singles and doubles in every round (25 shots). So after you shoot at Station Eight, you take doubles from Stations One, Two, Six and Seven. This gives you 24 shots of your round. You can then call any shot you wish for the 25th shot.

Skeet laws were modified in 1958 so that you may stand with your gun in any position that is comfortable. In shooting skeet in a match it is advisable to hold it at the ready. But in practicing for field shooting, I think it wise to hold your gun away from your shoulder as you would in the field.

To get into a good shooting position (or stance) stand with your left foot a short, comfortable distance in front of your right

[*Continued on next page*]

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foot (for right-handed shooters) and point your left foot forward. The right foot is then at right angles to your left and just back of the right heel.

To mount your gun properly, hold it firmly with both hands but don't strain. Place your left hand well forward on the gun's forearm but don't stretch. Be comfortable and relaxed. With your right hand grasp the gun grip so your thumb is placed around the grip—not alongside of it. Now lift the gun to your face and eye (don't drop your head to the gun) until the front sight is directly in line with the rear sight and seems to be sitting on top of it. Next roll your right shoulder forward (don't push it forward) until it presses firmly against the butt of your gun. Make sure the butt is on your shoulder and not off to one side or on the muscle of your arm.

That is how the crack shots stand and mount their guns. If you practice it on the skeet field until it becomes automatic you'll be well on your way to becoming a crack field shot.

When your turn comes to shoot, walk to the shooting station carrying your gun, muzzle pointed to the sky, breech open, conforming with good safety rules. Load up and take your proper stand. But do not bring your gun to the ready, for you need practice in mounting, leaning into the gun and picking up your bird as well as shooting. Instead, hold it as you will carry it in the field.

Face the place where you expect to kill the target but don't face the trap house from which it will come. Call, "Pull!" and in the same instant mount your gun as you would in the field when a bird flushes. Shift your weight to the ball of your left foot and bend the left knee slightly forward. With your legs and hips erect, lean your body and shoulders slightly forward *from the waist.* Without moving your arms, head or shoulders in relation to each other, twist from your ankles and knees toward the trap house from which the target is flying. Pick up the target in your gunsight and follow it. Then pull the trigger *and continue to follow the line of flight of the target with your gun* in a long follow-through.

Failing to follow through is said to be the cause of more than 50 per cent of the misses both in skeet and the hunting field.

There is a lot more to leading, enough to take up an entire article. But the follow-through method comes the closest to being the beginner's best friend. It is reasonably accurate. On the basis that the average human reaction time is 1/5 of a second, the delay between the moment you decide to shoot and the time the brain receives the order and carries it out, gives your gun time to establish the proper lead in most cases. This is excellent practice for upland bird shooting.

When shooting doubles at skeet, always shoot the first target. Don't worry about the second one till the first is killed. Then pick up the second and shoot it. The same applies in the upland bird field. When two or more birds get up, single out one bird and kill that before trying to shoot the second. Worrying about more than one target at a time will cause you to miss both.

Most clubs buy ammo at a discount and sell it to members at the going retail price, usually $2.75 a round of 25 shots. To this many clubs add twice the cost of trap boys and targets, about $1.00 and another $.25 for wear and tear or about $4.00 a round. Many clubs add 20 per cent to the bill for non-members. If many are shooting, this can give you an afternoon at the field for $4.00 in the company of experts. This is the best, the cheapest and surest way known of becoming a crack shot in the field on upland game birds. And there is no better time to start than right now. •

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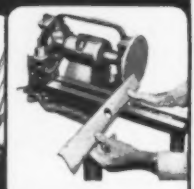

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Supersonic Planes

[*Continued from page* 63]

raises more difficult problems. The booms have caused trouble since the advent of supersonic military flying. The random military booming is a far different hazard, however, from what can be expected with scheduled commercial operations. At all supersonic speeds, the airliners will be accompanied across the continent by a rolling sonic boom. At low altitudes this boom would be intolerable to the people living beneath the flight corridor.

To alleviate this, the supersonic airliner will have to cruise 12 to 15 miles up—above what the engineers call the "civilization belt." However, to get there, it will be necessary to climb and descend at 400 to 500 mph below the 35,000 to 40,000 foot level. It will take about ten minutes, at very steep rates of climb and descent, for the plane to reach and drop down from these tolerable altitudes—much steeper angles than are used by today's jet aircraft. This will require a new design for seats. If the seats tilt with the fuselage floor, a forward facing chair would be comfortable for the passenger during the climb, uncomfortable on descent. Rearward facing seats would be comfortable during descent, uncomfortable during the climb. The solution may be passenger seats that pivot like rocking chairs to keep passengers erect regardless of the angle at which the deck of the airplane slopes.

Because the supersonics will be climbing and descending at rates of about 6,000 feet per minute, new and super-reliable cabin pressurization systems will be needed, to keep the air inside the plane at sea-level pressures at all times.

What the effect will be on supersonic airliner passengers, when it is realized that it is possible to get as much as .7g deceleration when pulling the throttles back at only 1,300 mph, no one fully knows. A total of less than 500 hours of flying at speeds above Mach 2 have been compiled. Undoubtedly, new passenger acceptance limits will have to be established for the supersonics.

The tremendous heat generated by aerodynamic friction on the supersonic airliner's skin surfaces in flight will require new methods, too. Cooling a Mach 3 trans-

ort cabin interior by today's methods would require cabin walls a foot thick or a gale of cold air blowing through the cabin area. One suggestion is that the fuselage be built with two layers of "skin," with water circulating between the two walls.

As the airlines approach the supersonic age, much new thought will be given problems beyond the technical aspects of the plane itself. Entirely new passenger handling techniques have to be evolved. Already, automatic electronic machines are coming into use that provide instantaneous information on seat availability anywhere in the world and, in the same instant, pass this information along to other machines which automatically punch out tickets.

Then, of course, there is the perennial question of baggage. What's the sense of traveling to London in two hours if you have to wait another hour for your luggage at the airport? Weight is going to be a serious economic factor on the supersonics. They require 10,000 to 15,000 pounds of extra fuel on each flight, regardless of the distance, just to get the plane up and down to its cruise altitude where the sonic boom will be no problem. Would it be feasible to limit baggage to carry-on items?

Moreover, the greatly shortened flying time with supersonic transports—one supersonic can handle as much traffic in a month as 12 Super Constellations or four DC-8s—will permit a relatively small number of airplanes to handle a large amount of traffic. This means the airlines won't have great fleets of planes in reserve. It is believed that 150 to 200 supersonics will be able to handle all the world's long-range air traffic by 1975, even with the anticipated increase in air travelers. This means more emphasis on servicing, maintenance and a host of other factors to keep the supersonics flying at up to 12 hours or more a day. They have to do that to make money for the airlines.

The cockpit arrangement of the supersonic airliner will be far different from that of present jet transports, and the pilot of tomorrow will play a different role. Almost all basic functions will be automatic and the pilot's responsibilities will be to monitor his electronic instruments, making corrections as necessary, and to be pre-

[*Continued on next page*]

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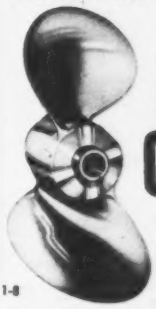

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pared for emergencies should they arise.

Air traffic centers will have their control time reduced by half to a third as a result of the higher aircraft speeds. Full mechanization of the air traffic control system has to be achieved for full supersonic airliner effectiveness.

What will be the cost of the supersonic age in air travel? Estimates today range from $400 million to $1,000,000,000 in development costs alone. An equal amount may be necessary for related operational facilities. A production-line supersonic will cost about $20,000,000.

One of the prime aviation steps to be taken by the Kennedy Administration—according to Washington's aviation insiders—will be a plan for the government to manage and subsidize development of the supersonic airliner. The three agencies to be involved, it is said, will be the Department of Defense, the Federal Aviation Agency and the National Aeronautics and Space Administration. First step, it is believed, will be tests by the NASA on a leased B-58 bomber to work out air traffic and similar problems. The tests will be carried out at Edwards Air Force Base in California.

No time can be lost. Important national defense considerations are involved. National prestige is at stake. There is no doubt that whatever country first builds a good supersonic airliner will be in a position to dominate the air routes of the world. •

Ringing Doorbells

[*Continued from page* 69]

What are the advantages of the business?

You are an independent businessman. You set your own hours, pick your own methods of approach and punch no time clocks.

How about disadvantages?

You're subject to the same risks as a businessman in any field. There's no guaranteed regular income as in a salaried job. You need a lot of persistence and must be able to take doors being slammed in your face.

What newer approaches? Isn't it all just ringing doorbells and making your pitch?

Not by a long shot. The growth of the

suburbs has increased the popularity of the home demonstration. Groups of women are invited to private homes where products are demonstrated. Refreshments are served, the hostess receives a lovely gift—and sales are racked up.

How big is direct selling as an industry?

It sells about $3,000,000,000 worth of merchandise every year, not including sales of milk and bread, insurance, mutual funds and the like. If these were added, the total annual figure would be much greater.

What are the commissions?

Commissions vary between 25 and 40 per cent of sales.

How does one get started?

Pick one or more lines. Then write to the National Association of Direct Selling Companies at 165 Center St., Winona, Minn. They will send you a publication called The Blue Book Of Direct Selling. This publication lists the companies engaged in the field that interests you, types of products available, the names and addresses of contact men you can write to.

You will then be supplied with a sample kit and literature by the company you have contacted. You may be invited to attend orientation lectures or go out with a group of salesmen to learn the ropes.

Any hints on which products are best suited to direct selling?

Here's advice from Dr. Albert Haring, professor of marketing at Indiana University: Try to pick those products having most of the following features: High quality compared to the competition; unconditional warranty; exclusive or special features; capable of being effectively demonstrated; subject to repeat sales; and used by a broad segment of the public.

Those are the facts about direct selling, and they verify that the doorbells of America can open *your* door to riches.

They've certainly been proven by Robert Craig, 22, of Chicago, who ended his first year of selling brushes from door to door with a net profit of $13,000 . . .

By Joe Van Winkle of Detroit who, with his wife, now realizes a hefty five-figure income from direct sales . . .

And by a student at Abilene Christian College of Texas, who earned more than $5,000 in 14 weeks of door-to-door selling.

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U-MAKE-IT PRODUCTS

DELAND, FLA., DEPT. 14

Meet Dick Petty

[*Continued from page* 97]

there just isn't any substitute for experience."

Dick and his father had come to Daytona with a pair of Valiants for the new compact car race, plus their brace of '60 Plymouths. I next asked Dick if his father ever pulled rank on him about who would drive which car and he answered, "No, we build up two cars just alike. When we're through, Daddy asks me which one I want and I get it. Like I told you, we're in *business* to make *money* and there's no room for personal feelings or 'rank.' "

That brought up the subject I was most curious about. "Dick," I asked, "How about the matter of dirty or rough driving? Are you as tough with Lee as you'd be with any of the other drivers?"

He came back with, "Guess I wouldn't be human if I didn't show Daddy some extra courtesy on the track—and he shows it to me too when the going gets hairy. Speaking of courtesy, the track where you see the most of it is right here at Daytona. Even the most pudding-headed driver knows there's no room for fooling at 150 miles an hour."

I then brought up the matters of driving strategy, technique and "heady" driving. He said, "Well, in the first place each track has its own particular problems and there is a particular answer for each of them. You don't use the same strategy in a five hundred miler as you do in a 125-mile sprint. You have to take in the size of the track, the size of the field and the size of the ponies under your hood. You've got to consider who is in the field with you and later on, in a long race, who is still left. To put it another way, you never drive any two races alike. Sometimes Daddy and I plan to stay away from each other so we won't be involved in the same accident that would wash us both out. Anyway, I think more races are won in the pits than on the track. Our pit crew never stops drilling."

Knowing that Dick had already demolished six cars while learning his trade, I asked him if he considered that the price of his education. He said, "It'll be a long time yet before I consider myself capable. Take a look at that Valiant I scratched last Sunday in the compact race." (It was a tota

wreck—Dick had been bumped by Paul O'Shea's Valiant, had gone out of control, creamed the east turn guard rail and spun six times at over 125 mph) "Looks to me like I've still got a ways to go."

When asked if he had any desire to drive at Indianapolis, he replied, "That's a different league; those boys have their own pool table."

Next I asked, "What do you think of sports cars?" His answer was a startling, "That sporty car deal doesn't show me anything. Those boys drive more for show. They don't seem to understand the principle of driving."

This lack of awe on his part for the gearbox set prompted me to probe a bit further into it with, "How would you rate the skill of stock car drivers with what you've seen of the sports car boys?" His comment was, "I'd bet my next two months' prize money on the top five NASCAR drivers against the top five sporty car boys in equal equipment on any course."

We chatted for about two hours, during the course of which I discovered that Dick neither smokes nor drinks—nor holds it against anyone who does. He does, however, object mildly to drivers who have failed to put some sleep between their last drink and the fall of the starter's flag, which is quite understandable. I also found out that he gets ten hours sleep whenever he can, and always the night before a race. He watches his diet, although he has no weight problem, and avoids fried food.

The Pettys return to their headquarters in Randleman, N. C., after most races to rebuild their racing equipment. This means a total of over 75,000 miles a year just driving to and from races.

Before letting Richard get back to his trade I asked if he had any advice to give young boys who might like to try their luck as stock car drivers. He replied, "Well, you just can't say there is a 'best way' to get started. But I can tell them the easiest way and that's to find a rich man who can pay the bills, because there are plenty of bills to pay. For instance, Daddy spends almost $20,000 a year just for tires! Anyway, to get started a boy should try to get a ride anyway he can, like hang around garages and tracks and just be helpful. Another thing I can tell them is, it isn't all glory—and that's for sure!" •

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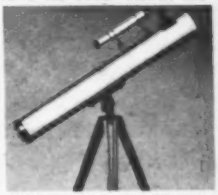

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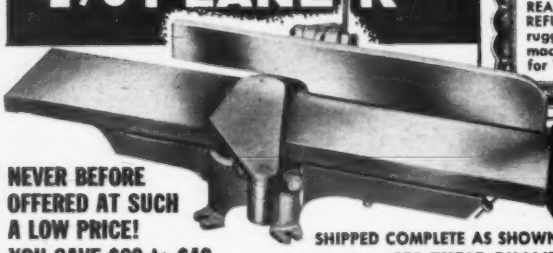

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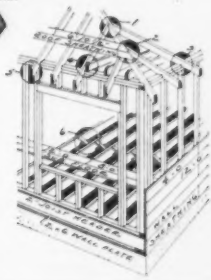

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